SYSTEM AND TABLES

OF

LIFE INSURANCE.

A TREATISE DEVELOPED FROM THE EXPERIENCE AND RECORDS OF
THIRTY AMERICAN LIFE OFFICES, UNDER THE DIRECTION
OF A COMMITTEE OF ACTUARIES.

BY

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ACTUARY IN CHARGE.

PUBLISHED BY SUBSCRIPTION.

FOR ADDITIONAL COPIES, ADDRESS THE ACTUARY IN CHARGE,

NORWICH, CONN.

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PREFACE.

THE origin of the present collection of statistics, dates from the re-organization of the Chamber of Life Insurance in 1873. Among the leading objects, it was provided that, "there shall be a standing Committee on Mortality Experience, appointed by the Executive Committee, immediately after the Annual Election of the Chamber, in each year, and consisting of five members, to whom shall be referred the work of collecting the statistics of Mortality Experience, classifying, arranging, and tabulating them for practical use, with power to employ skilled assistance."

In entering upon the duties assigned them, this Committee, after some preliminary consultation, decided to invite a more full expression of opinions in a general meeting of Actuaries, which was held in New York, Nov. 19, 1874. Among those present and participating in the deliberations, besides the Committee, were S. C. Chandler, Jr., D. Parks Fackler, C. M. Hibbard, Sheppard Homans, Jas. Weir Mason, Prof. C. F. McCay, Emory McClintock, George W. Phillips, William D. Whiting, and Charlton T. Lewis, Secretary of the Chamber. Besides these, a considerable number communicated their views by letter. An enlarged plan of operations having been generally called for, the Committee, in concurrence, subsequently issued the following Circular, under date of March 16, 1875 ; copies of which were addressed to all Life Insurance Companies in the United States:

SIR :

The Chamber of Life Insurance has, through its Executive Committee, appointed the undersigned a Committee upon Mortality Experience, with instructions to procure from every American Company willing to furnish it, their experience in full up to a recent period. In accordance therewith, we respectfully and most earnestly request you to favor us with the data of your company to December 31, 1874, as indicated below. While the amount of labor to be performed both by the companies and the Committee will be considerable, the importance of this work, if well done, to American companies, cannot be over estimated. Tables made from such experience can justly be regarded as of higher authority, and will probably more nearly approximate the true average of mortality among insured American lives than any now in use. And should similar examinations be made hereafter, as we trust may be the case, in which the results of the work now in hand may be merged, by such periodic examinations, and the aggregation of experience, we shall be able measurably to trace any general improvement in longevity, the effect of causes operating specially within the period under consideration, the effect of public sanitary measures, and probably many other points of interest incident to the development and improvement of a new and growing country. We hope that the present undertaking is but the beginning of a systematic and profound study of the mortality among insured American lives.

In settling the details of this work, we have had in view certain important classifications, leaving many minor though interesting ones to be wrought out by the companies themselves ; and the saving of all but indispensable labor to the companies contributing their data.

The points agreed upon by this Committee for consideration are :

> *First,* The general mortality among insured lives ;
> *Second,* The mortality by sexes ;
> *Third,* The mortality by localities, taking the State as a basis, except in certain States where the County is to be designated ;

Fourth, The mortality by years of insurance, in order to show the effect and duration of medical selection ;

Fifth, The ratio of financial loss to sums exposed to risk ;

Sixth, A classification of the causes of death, in general, by locality, and such other special relations as may be deemed advisable hereafter.

For these purposes the Committee have adopted the enclosed card, as enabling the companies to furnish the necessary data with the least possible labor. The instructions upon another page will enable a clerk to make correct and rapid use of it.

Companies which have already arranged their data for their own examination in a manner to supply the Committee what is called for by the card, need only furnish their cards or sheets already prepared or their classifications if these correspond to those above stated, and any such material will be returned after use ; and, if desired, all cards will be returned. No tabulation or exhibit will be made in any manner of the separate mortality of any company, and the data will be held as confidentially given. It is our desire that the data may be given with all reasonable speed, and in view of the great interest and importance attaching to the work, we trust all will make this matter one of special care and attention, and employ in it sufficiently skilled labor to insure neat and accurate execution. The cards should be carefully verified before being sent to the Committee, which will have no means of correcting errors made at the offices of the companies.

The results of this labor will be reported to the Chamber at the earliest practicable moment, and by it published so as to be accessible to all desiring it.

We believe it to be the general conviction among American and foreign Insurance officials and actuaries that the material now capable of being supplied here will give results of peculiar value and importance, and that American companies owe it to the business at large and to their own interests that these should be collated and properly classified ; and that it would be a cause of regret should any Company fail to join in this work, which is not undertaken for the benefit of the Chamber alone, or of the companies belonging to it, but for that of all companies doing business in this country. We promise our best endeavors to make the character of the work worthy of its importance.

Please indicate at once to the Chairman at Hartford, Conn., the number of cards you may need, and the probable time at which they can be completed.

Respectfully,   JACOB L. GREENE, *Chairman.*
                     EDWIN W. BRYANT,
                     ROBERT A. GRANNISS,
                     LEVI W. MEECH,
                     HOWELL W. ST. JOHN.

The way had been opened for this investigation, by the London Institute of Actuaries, which had collected the records of twenty Life Offices in England and Scotland. But the strongest incentive, lay in the recent remarkable increase of Life Insurance in the United States, creating a demand for a more systematic exposition of insured experience. The following summary from the current Massachusetts and New York State Reports, comprising the greater part of the Companies in the Union, may serve to illustrate the magnitude of the business at this epoch.

In a general statement, the fifty thousand policies of 1859 had, in four years or in 1863, increased to a hundred thousand. Then the rate of increase was temporarily doubled, and within two years more, at the end of the year 1865, the number exceeded two hundred thousand. In another two years, or in 1867, it exceeded four hundred thousand. And in 1872, the number of policies had risen to eight hundred thousand. By this time, the annual discontinuances began to balance the diminished number of entrants ; and at the epoch of the experience, Dec. 31, 1874, the total number exposed to risk has been nearly stationary for five or six years, with about eight hundred thousand policies in force.

The preceding Circular was accompanied by the adopted form of policy cards, and instructions, which are given hereafter. In the final result, twenty-three Companies returned the cards, filled out from their office records ; and seven gave the results of their own investigations, brought down to the beginning of the year 1874. The latter returns were accompanied by collateral explanations and results sufficient for verifying

and resolving them into the original elements, in uniformity with the card reductions. In this manner the entire returns were united ; and it was found that, of all the valid experience, recorded upon the office registers in the United States, so favorable had the enterprise been regarded, fully three-fourths had been contributed for this collection.

The following are the names of the Companies whose combined experience is given in the succeeding pages, with the year of organization and aggregate number of policies:

COMPANIES.	ORGANIZATION.	COMPANIES.	ORGANIZATION.
1. AETNA LIFE, Connecticut,	1850	16. MASSACHUSETTS MUTUAL, Massachusetts,	1851
2. AMERICAN MUTUAL, Connecticut,	1848	17. METROPOLITAN, New York,	1867
3. BROOKLYN, New York,	1864	18. MUTUAL LIFE, New York,	1843
4. CHARTER OAK, Connecticut,	1850	19. MUTUAL BENEFIT, New Jersey,	1845
5. CONNECTICUT GENERAL, Connecticut,	1865	20. NATIONAL OF UNITED STATES, Illinois,	1868
6. CONNECTICUT MUTUAL, Connecticut,	1846	21. NEW ENGLAND MUTUAL, Massachusetts,	1844
7. CONTINENTAL, New York,	1866	22. NORTHWESTERN, Wisconsin,	1858
8. COVENANT, Missouri,	1853	23. PENN MUTUAL, Pennsylvania,	1847
9. EQUITABLE, Iowa,	1867	24. ST. LOUIS MUTUAL, Missouri,	1858
10. EQUITABLE, New York,	1859	25. TRAVELERS, Connecticut,	1866
11. GERMANIA, New York,	1860	26. UNION CENTRAL, Ohio,	1867
12. GLOBE, New York,	1864	27. UNION MUTUAL, Maine,	1849
13. JOHN HANCOCK, Massachusetts,	1862	28. UNITED STATES, New York,	1850
14. LIFE ASSOCIATION, Missouri,	1868	29. WASHINGTON, New York,	1860
15. MASSACHUSETTS HOSPITAL, Mass.,	1823	30. WESTERN NEW YORK.	1868

SUMMARY IN 1874.	NET NUMBER OF POLICIES OR LIVES.	AMOUNT INSURED.
Existing or not terminated,	549,418	$1,367,217,000
Discontinued,	431,568	1,159,867,000
Died,	46,543	130,224,000
Whole Number,	1,027,529	$2,657,308,000
Exposed to Risk one Year,	4,504,797	$11,839,005,500

These figures represent the net numbers after more than a hundred thousand secondary and other policies have been omitted or transferred according to the rules of reduction. Thus the total Experience of the Thirty Life Offices has a net basis of more than a million of policies, or lives, insured for more than twenty-six hundred millions of dollars.

The arrangement of so extensive a series of tables has been guided, as far as possible, by the best established precedents, and mere innovation has been carefully avoided. In several particulars, however, the system of Life Tables as described in that great repository, the *Journal of the Institute of Actuaries,* was found to be still in a state of progress. Different courses were indicated for determining the proper resultant between the effects of the medical selection and the counter selection of the insured, such as the omission of the first three or five years experience. Also shorter methods were demanded for changing the standard life table to higher or lower grades of mortality. And another desideratum was the condensation within a convenient compass of the voluminous tables for term policies, endowments, and joint lives, to give monthly as well as annual values. It has been much easier to describe, than to supply what is needed. That an advance might be made to meet these difficulties, the actuary in charge has given them all the consideration which other duties have permitted ; with what success the examination of the following pages prepared by him, must determine. Among the improvements to meet the necessities of the work, may be named, the principles of transformation of Office data, the system of final series, the life table graded for different

climates, the proof of the logarithmic law of mortality, the general valuation tables, the arrangement of joint lives and survivorships, with new investigations described hereafter.

The first reductions of the Mortality Experience, were commenced in November, 1875 ; but the principal part of the returns arrived in the following summer, when the number of clerks engaged in their reduction, was augmented from three to ten. Other returns came in at later dates ; and the last was received at the close of the year 1877. With an adequate clerical force, the reductions were pressed forward as fast as the returns arrived ; and in March 1878, the first fruits appeared in the issue of copies of the Climatic Tables for examination.

It may here be mentioned, that after the preliminary arrangements had been initiated and were fairly in progress, two of the Committee withdrew from membership though not from interest in the work, and their places were supplied in succession by the election of Emory McClintock and George W. Phillips. The former actuary had especially advocated the importance of the returns of losses and amounts insured ; while the latter actuary, by elaborate office reductions, had prepared the way for the present climatic statistics. For the position of chairman of the committee, Levi W. Meech was chosen, who had at an early stage been designated to take charge of the returns, and to make the proper reductions at the expense of the Chamber. And in May, 1878, after the dissolution of the Chamber, John M. Taylor, Secretary of the Connecticut Mutual Life Office, accepted the position of Treasurer.

In the medical department, the classification of diseases given by the cards, required the services of a physician long conversant with office examinations, and the current applications from different parts of the United States. Such an examiner was found in J. C. Jackson, M.D., of Hartford, by whom the numerous returns of diseases were faithfully examined during several months, till the medical statistics were classified under the most favorable conditions of accuracy and authority. It should also be mentioned that the returns from two Western Life Companies, were generously furnished by the late William E. Harvey, Actuary, after his own reductions. And in this connection, for maintaining the highest attainable accuracy, thanks and commendation are due to our clerical force, especially to M. C. Spring, S. E. Warner, and S. M. Hayward, assistants. From the amateur collection courteously furnished by Mr. J. Downes, of Washington, D. C., we have copied the accurate table of anti-logarithms, reduced from the eleven place values of Dodson, compared with Vega ; and have added proportional parts for the middle of each division, computed with three extra decimals.

To give confidence in employing the vital statistics, it may be proper to state, that all the original returns had been copied under responsible direction, from regular Office records, alike free from objection. The subsequent reductions by the Committee, have been verified by two independent operations ; and a further check was obtained by comparison of the parallel columns of Lives and Amounts. The work has been nearly six years in progress, under a single direction of large experience ; and with favorable conditions, has thus resulted in an authentic standard for reference.

<div style="text-align:right">

Levi W. Meech, *in Charge.*
Edwin W. Bryant,
Emory McClintock,
George W. Phillips,
Howell W. St. John.

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PART FIRST.

ELEMENTARY OBSERVATIONS AND TABLES.

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The Elementary Observations and Tables of Part First are classed into four Divisions, as follows:

———————————

DIVISION FIRST.

MORTALITY AND LOSS EXPERIENCE.

The received method of reduction presupposes the new business of different calendar years to be superimposed or brought together, as if the entrant insurances were all effected in one calendar year. Thus the entrants at the age of thirty, for example, are all classified together, as entering in the same initial year. From this origin, the annual deaths and discontinuances are traced forward and noted year by year, through the whole course of insured experience. Such are the elementary observations given in Tables I–IV, for male, and for female life. Let us first glance at the methods from the beginning.

SECTION I.

Instructions and Cards.

The following Instructions of the Committee in March, 1875, were published and attached to folio card-boards, for constant reference in filling out the blank cards, from the Office records.

INSTRUCTIONS.

Let each figure and word be plainly written with a pointed pencil of medium hardness.

Private mark and number of Policy. The *first* blank, in the left hand upper corner, is for the convenience of the Committee in separating the cards, and will contain their private mark for the several companies, and need not be regarded by you,—nor the *second*, which contains the policy-number,—inserted consecutively by the printer's numbering machine.

Residence.

The *third* blank, "residence," is to be filled with the name of the State only, except that in the following States the County is also to be inserted, viz.: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Arkansas, Mississippi, Louisiana and Texas.

In case the residence be in any foreign country, draw a line through the word "State" and write the name of the country in the same space.

Amount and Kind.

The series of blanks relating to the amount, kind, and duration of the policy are to be treated as follows:

In the top space, under "Amount," write the amount insured, thousands at the left hand, and hundreds at the right hand of the light perpendicular line, using no ciphers, where even hundreds or thousands are entered.

On the same horizontal line under "Kind," indicate the kind of policy by L for Life, E for Endowment, and T for Term Policies.

Years of Entry and Exit.

On the same horizontal line, under "Cal. Year of Entry," enter the calendar year in which the policy was issued.

If the policy be still in force, make a dash after the figures "18" in the same horizontal line, under the "Cal. Year of Exit."

If it has ceased to be in force for any reason except death, enter upon that line and under the "Cal. Year of Exit," the calendar year in which it ceased, and make a dash in the blank "Cause of Death."

Exit by Death.

If it ceased by death, make the same entries, *but carefully write D after the year of exit.*

Changes in Amount and Kind.

If any changes have occurred in the amount or kind, the original number, age and date being retained, other entries must be made as follows:

The original amount, kind and year of entry having been entered as above, the calendar year in which the change was made is to be taken as the year of exit of the original policy, and entered in the top line under that head.

Then an entry of the changed amount or kind, as the case may be, is to be made under the proper head on the second line, and the date of the change is to be taken as the calendar year of entry of the changed policy, which will of course correspond with the calendar year of exit of the original policy.

Exit by Death under CHANGED Policies.

The termination by death or otherwise of the second or changed policy is to be treated in the same manner as has been pointed out for the original.

Second Changes.

Should the changed policy have been still further changed, the proper entries are to be made upon the third line, under the several heads, in the same manner as required for the changes from the original.

Third and subsequent Changes.

If more than two changes have taken place, the subsequent ones may be entered in the bottom blank for memoranda.

When changed Policy is in force. If the policy in which change has been made, be in force, make a dash after the figures "18" under the "Cal. Year of Exit," in the horizontal line occupied by that policy.

Revival of lapsed Policies. If a policy has lapsed and has subsequently been revived under the same number, date, age, etc., and the revival has taken place in the calendar year in which the lapse occurred no entry of these facts need be made.

If the revival has taken place in a later calendar year than that in which the lapse occurred, then the calendar year of lapse is to be entered as the year of exit of the original policy, and the revival is to be treated as a change, and the proper entries are to be made upon the second line, the calendar year of revival being taken as the year of entry of the changed policy, and write the letter R. in the memorandum blank at the bottom.

Revival or change WITHOUT new medical examination. If revival or change has been made by a policy under a new number, *without* a new medical examination, let the card for the new policy contain in the memorandum blank the number of the original policy also, with an O written before it.

Policies lapsed and good for "PRO RATA" amounts. In case policies after lapse remain good by their own terms for a fixed or "*pro rata*" amount of the original sum insured, the year of lapse is to be taken as the year of exit of the original, and also as the year of entry of the changed or "*pro rata*" amount.

Revival of "PRO RATA" Policies. In case such policies, after continuing for a time for the "*pro rata*" amount, are revived under the same number, date, etc., such revival is to be treated as a second change and entered accordingly.

Age of Entry. The blank "Age at Entry," is to be filled with the office age, or that upon which the premium is written.

"Rated Age." "True Age." When for any special reason, the age has been rated higher or lower than the true age, the true age at nearest birthday should be stated in the memorandum blank with the words "true age" before it.

The blank following "Age of Entry," upon the same line, may be disregarded, being for the use of the Committee only.

Sex. The blank "Sex" is to be marked with a dash for a male life, and with a capital F for a female life.

Cause of Death. In the blank "Cause of Death" write the cause stated upon the Company's register.

The following special cases must be carefully noted:

"Not Taken" Pol's. Omit all policies "not taken" or not actually put in force.

"Re-insur." Pol's. Omit all policies of re-insurance, or for the benefit of other companies.

Joint Life Policies. In case of a "joint life policy" *make a card in full for each life,* using a separate card for the second, but writing in the number.

Joint Life Policies.   Mark each card in the memorandum blank with a capital J, and place them both in an envelope also marked J.

It may sometimes happen that a "joint life policy" is discontinued as to one of the lives, and so adjusted as to continue upon the other life singly.

The card representing the life upon which the insurance is *discontinued* will show the amount, kind, calendar year of entry and calendar year of exit, in the usual manner of a terminated policy.

The card representing the life upon which the insurance is *continued* will show the change in the same manner as other changes are indicated, with the addition of the letter S in the memorandum blank, signifying "Single Life."

Limited premium Policies.   No special designation need be made of policies with a limited number of premium payments, whether completed or otherwise.

Policies terminated by causes other than Death.   When a policy has terminated for any cause other than death, the cause need not be stated, but be careful to make a dash in the blank "Cause of Death."

SAMPLE CARDS.

A.				AA.			
RESIDENCE.	State. *Maine.*			RESIDENCE.	State. *Maine.*		
	County.				County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.	Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
10	*L*	1864	18—	10	*L*	1864	18—
		18	18			18	18
		18	18			18	18
Age at Entry.	30	10		Age at Entry.	30	10	
Sex.	—			Sex.	*F*		
Cause of Death.				Cause of Death.			

B.

| RESIDENCE. | State. *Virginia.* | | |
| | County. *Henrico.* | | |

Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
7	5	*E*	1860	1863
3		*L*	1863	18—
			18	18

Age at Entry.	37	
Sex.	———	
Cause of Death.		
	·	

C.

| RESIDENCE. | State. *Mass.* | | |
| | County. | | |

Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
	5	*L*	1855	1864
3		——	1864	1869
7	5	——	1869	18—

Age at Entry.	25	
Sex.	———	
Cause of Death.		

D.

| RESIDENCE. | State. *Miss.* | | |
| | County. *Bolivar.* | | |

Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
10		*E*	1865	1870 *D*
			18	18
			18	18

Age at Entry.	42	
Sex.	———	
Cause of Death.	*Typhoid Fever.*	

E.

| RESIDENCE. | State. *Kansas.* | | |
| | County. | | |

Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
5		*E*	1860	1865
5		*L*	1865	1872 *D*
			18	18

Age at Entry.	34	
Sex.	———	
Cause of Death.	*Pneumonia.*	

F			
RESIDENCE.	State. *Maryland.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
3	*L*	1860	1866
2	5	*E*	1866	1868
	8	—	1868	1873.
Age at Entry.	29		
Sex.	—		
Cause of Death.	*Remittent Fever.*		

G.			
RESIDENCE.	State. *Vermont.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
10	*L*	1870	1872
		18	18
		18	18
Age at Entry.	38		
Sex.	—		
Cause of Death.	—		

H.	11293		
RESIDENCE.	State. *Michigan.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
3	5	*L*	1859	18—
		18	18
		18	18
Age at Entry.	34		
Sex.	—		
Cause of Death.			

HH.	11293		
RESIDENCE.	State. *Michigan.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
3	5	*L*	1859	18—
		18	18
		18	18
Age at Entry.	32		
Sex.	*F*		
Cause of Death.			

I.			
RESIDENCE.	State. *New York.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
7 | 5	*L*	18*49*	18*70*
		18	18
		18	18
Age at Entry.	*36*		
Sex.	——		
Cause of Death.			
	J		

II.			
RESIDENCE.	State. *New York.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
7 | 5	*L*	18*49*	18*70*
		18	18
		18	18
Age at Entry.	*30*		
Sex.	*F*		
Cause of Death.	*Cerebro Spinal Meningitis.*		
	J		

K.	*9378*		
RESIDENCE.	State. *Penn.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
5	*L*	18*60*	18*70*
5	——	18*70*	18—
		18	18
Age at Entry.	*33*		
Sex.	——		
Cause of Death.			
	J S		

KK.	*9378*		
RESIDENCE.	State. *Penn.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
5	*L*	18*60*	18*70*
		18	18
		18	18
Age at Entry.	*30*		
Sex.	*F*		
Cause of Death.	——		
	J		

M.			
RESIDENCE.	State. *N. H.*		
	County.		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
5		*L*	18*60*	18*65*
2 5		*L*	18*65*	18*68*
5		*L*	18*68*	18—
Age at Entry.	*30*		
Sex.	———		
Cause of Death.			
	H		

N.			
RESIDENCE.	State. *Mississippi.*		
	County. *Jackson.*		
Amount.	Kind.	Cal. Year of Entry.	Cal. Year of Exit.
5		*L*	18*72*	18—
			18	18
			18	18
Age at Entry.	*37*		
Sex.	———		
Cause of Death.			
	C—19263		

DESCRIPTION OF SAMPLE CARDS.

EACH of the sample cards is marked with a letter of the alphabet—a single letter for male lives and a double letter for female lives—the single and double letter cards each showing the same data.

Thus, A shows a policy on the life of a resident of Maine, insured at age 30 for $10,000; Life Policy; year 1864; still in force; male life. AA shows precisely the same data for a female life.

B shows a policy on the life of a resident of Virginia, Henrico County, for $7,500; Endowment; issued 1860; changed in 1863 to a $3,000 Life Policy; still in force; age at entry 37.

C shows a policy on the life of a resident of Massachusetts for $500; Life; issued in 1855; changed in 1864 to $3,000 Life; changed in 1869 to $7,500 Life; still in force; age at entry 25.

D shows a policy on a resident of Bolivar County, Mississippi, for $10,000; Endowment; issued in 1865; terminated by death in 1870; age at entry 42; cause of death, Typhoid Fever.

E shows a policy upon a resident of Kansas for $5,000; Endowment; issued in 1860; changed in 1865 to a Life policy for the same amount; terminated in 1872 by death from Pneumonia; age at entry 34.

F shows a policy upon a resident of Maryland for $3,000; Life; issued in 1860; changed in 1866 to $2,500; Endowment; and changed again in 1868 to $800 Endowment; terminated in 1873 by death from Remittent Fever; age at entry 29.

G shows a policy upon a resident of Vermont; issued for $10,000; Life; in 1870; terminated in 1872 for any cause other than death; age at entry 38.

H and HH are the proper cards for a Joint Life Policy upon residents of Michigan; male and female; for $3,500 Life; issued in 1859; still in force; age of the male 34; age of the female 32.

I and II are the cards of a Joint Life Policy upon residents of New York, issued for $7,500; Life; in 1849; terminated by death of female in 1870, from Cerebro Spinal Meningitis; age at entry of male 36; age of female 30.

K and KK are cards representing Joint Lives; insured for $5,000 in 1860; and from which the female life was dropped in 1870; the policy adjusted to continue as a single insurance upon the male from that date.

L shows a policy upon the life of a resident of New Jersey for $5,000; Life; issued in 1860; at age 25; lapsed in 1865; revived in 1866, and still in force.

M shows a policy upon the life of a resident of New Hampshire for $5,000; Life; issued in 1860; at age 30: lapsed in 1865; continuing good by its own terms for $2,500, and revived for the original amount in 1868; still in force.

N shows a life Policy still in force, upon the life of a resident of Jackson County, Mississippi, issued for $5,000, in 1872, at age 37, without medical examination, to revive or take the place of Policy No. 19,263, upon the same life, lapsed.

SECTION II.

Adjustment of Cards. Durations. Joint Lives. Transfers.

After an interval of four years, during which these Instructions have been followed to their proper completion, the following additional remarks and specifications may be noted.

The general plan has been guided by the adoption of two important precepts. First, that every insurance must commence with a Medical Examination. Second, that after the Medical Examination at the beginning, the method of reduction must correctly trace the counter selections of the insured, which are continued from year to year, by changes of the Amount Insured, that is, by increase or by decrease, by taking out additional policies, or by total lapse, surrender, or decease. In this aspect, the investigation might not inappropriately be termed the Problem of the Selections.

To accord with the latter precept, the English method of *Lives*, on the plan of a census of living and deaths only, without the sums insured, has been supplemented by parallel columns of the *Amounts*, treating dollars as lives. The present statistics, therefore, are two-fold; and have required more than double the usual labor in their preparation.

The cards, on reception, were first examined from beginning to end, to select out all the secondary insurances, such as the preceding sample card N, marked O underneath. This particular entry O—19,263 simply refers from the secondary to the original insurance noted on card No. 19,263. The secondary or "O–cards" so called, were next copied on the middle line of the originals, which were sought out for this purpose, before the regular order of the cards by number was broken up. The O–cards, being about one-tenth of the whole, together with Reversionary Dividends, were laid aside as supernumerary.

After this and other preparations, presently described, the next step was to note the Duration on each card of single insurance, which was found by subtracting the first "Cal. Year of Entry" from the last "Cal. Year of Exit," or (in case of Non-terminated or Existing policies) from the *Epoch* 1874, when the experience was inventoried. Thus on the preceding cards A, and AA, the difference of 1864 and 1874, that is, Duration 10, is noted opposite the age. We may observe that the sum of the age and duration, or 30 and 10 on the card A, gives the advanced age of the insured, 40 years, in 1874. A more full account of the connection of Age and Duration will be given hereafter.

With respect to cards having two or more successive insurances, the Durations are noted, after preparation, in the following manner. To refer to a few instances:—Where the amounts are alike as on the preceding card E, the entries may be regarded as two parts of one experience, or $5,000 exposed to risk through a duration of 12 years, like a single policy. Where the amounts are different, as shown on the preceding card F, the above rules require its resolution into three new separately written cards, all commencing with the medical examination of 1860; that is, (1) a Death card of the last amount $800 for the whole Duration 13 years; (2) a Discontinued card of the difference 2,500–800, or $1,700 from 1860 to 1868 or Duration 8 years; and (3) another Discontinued card of the difference 3,000–2,500, or $500 from 1860 to 1866 or Duration 6 years.

All the other similar cards B, C, M, can be superseded by single cards on the same principle. Indeed, experience seems to indicate that separate cards are more convenient in practice, than the three ruled lines of the present arrangement. Thus the card B is to be resolved (1) into an Existing card of the last amount $3,000 for Duration 14 years, and (2) a Discontinued card of the difference 7,500–3,000 or $4,500 for 3 years.

On cards C, M, the lower amount always subtracted from the next preceding amount over it, will give a negative difference. The corresponding cards of this species are to be reserved for future subtraction from positive results of the same age and duration. Thus, card C is to be superseded by (1) an Existing card of the last amount $7,500 from 1855 to 1874 or 19 years; (2) a Discontinued card for the negative difference—$4,500 from 1855 to 1869 or Duration 14 years; and (3) another Discontinued card for the negative difference—$2,500 from 1855 to 1864 or Duration 9 years. These cards (2), (3) are to be reserved for future subtraction as above mentioned. These reductions will be best understood by clerks who are familiar with algebraic operations.

Heretofore, the cards of *Joint Lives* have usually been reduced as single lives. But the death of the first of a couple, is occasionally followed by the death of the second in the same year; and such second deaths, although noted on the single life plan, escape the record of joint lives. To correct for this omission, let q, q' or $1-p$, $1-p'$ denote the probabilities that two persons insured for $a each will die within one year. As single lives, the Expectation of Loss in one year will be $a(q+q')$. As joint lives, the Expectation of Loss will be $a(1-pp')$, or $a-a(1-q)(1-q')$, that is, $a(q+q'-qq')$; which may evidently take the form

$$aq(1-\tfrac{1}{2}q')+aq'(1-\tfrac{1}{2}q).$$

The last expression of Probable Loss may also represent the Actual Loss on Joint Lives. Hence if each Actual Loss is divided by the six months probability $(1-\tfrac{1}{2}q')$ of the survivor, the results will correspond to the experience of single lives. Since the average value of $\tfrac{1}{2}q'$ is about $\tfrac{1}{4}$ of 1 per cent. we may for every 200 Death cards of Joint Lives, select and change into a Death card one Discontinued card of the same

sex, and of similar age, duration and amount. After this simple correction, first devised in the present investigation, the pairs of cards of joint lives can be separated, and the whole series united with the other cards for single lives.

Another practical artifice was employed to change a few thousand policies from the plan of *next birthday* to the American custom of *nearest birthday.* Instead of dating back each card of the whole series *half* a year, each alternate card was dated back a *whole* year; since all the policies were for ordinary amounts, and opposite errors would compensate each other. Another large collection of data with ages according to *last birthday,* was dated forward on the same convenient principle.

There were also several thousand *Transferred Policies,* or policies which on the winding-up of the Company that issued them, had been transferred to another Company. The transfer was accompanied with the original ages or years of Entry of the Existing policies, but the corresponding Discontinuances and Deaths up to the time of transfer, were not stated. Thus, suppose 100 or more persons to have entered the Cadmus Life Company at the age of 30 years. Five years after, the Cadmus is closed up, and the survivors at the age of 35, are transferred to a second Company. The valid experiences commencing at age 35, or five years after the medical examination, should enter Tables I and II, not on the first line, but on the fifth line below, at Duration 5.

This object can be accomplished by writing two cards for each transfer; the card (1) beginning with the medical examination at the age of 30, and extending forward into the returns of the second Company, as usual; and the card (2) beginning at the same age of 30, to be discontinued after a Duration of 5 years. The latter is to be reserved for future subtraction from positive Discontinuances of the same age and duration. In this way, the first five years exposure of the card (1) will finally be cancelled by the card (2), as was proposed.

In relation to *Endowment Insurances,* composed of two parts; that is, of a Temporary Insurance, and a Pure Endowment for the same amount; since the maturity of the Endowments was not specified on our cards, their effect on the whole experience is that of Temporary Insurance only.

Death Claims reduced by compromise or by litigation have been restored to the original amount, as the uniform standard of this investigation. In the case of a single Company where the amount actually paid, had been given in lieu of the normal Death Claims, a small correction of about $2\frac{1}{2}$ per cent. was applied for compromised and litigated claims, taken together.

Having thus represented the whole series by single cards, each commencing with a medical examination, and having noted on each of them its proper Duration, we apply the advantages of the card system as follows.

SECTION III.

Classifications of Data.

The next operation was to separate the cards of *Male Life* from those of *Female Life.* Each of these groups was then divided into the three classes of *Existing, Discontinued,* and *Died.*

Each of these classes was then sub-classified according to the *Durations of Policy,* 0, 1, 2, 3, 4, ... And these were next sub-divided into smaller packages of cards corresponding to the *Age of Entry.* The counting of cards in these packages, gave the Existing, Discontinued, and Died, of *Lives* in Table I and II. And the addition of the corresponding *Amounts,* by the same packages, gave the parallel columns of

Existing, Discontinued and Death Claims. The latter were first added in full, and then changed to the nearest *Thousands* of Dollars, omitting the last three residual figures.

For every Age of Entry, the sum of the Existing, Discontinued, and Died, expresses the total *Number of Entrants* at the head of the columns. For example, at the age of 27 years, on Page 90; 36,221 had entered, and were insured for the initial amount of $87,030,000. Of these policies, 18,328 were still in force, or existing at the epoch in 1874; also 16,790 had been discontinued; and 1,103 had died, as noted at the foot of the columns. Of the Deaths, the largest number in any one year, and more than one-third of the Discontinuances had occurred in the second year, shown opposite Duration 1. This feature is common to all the Companies. The first ten or fifteen years Duration comprise the greatest part of the business; and the whole is practically limited to thirty years; although a few cases are of older date.

SECTION IV.

Calendar Years and Policy Years.

For greater convenience, as before mentioned, the new business of different calendar years is superimposed, for this investigation, as if all the insured entered the Company uniformly during one initial year. On the average they enter at the middle of this year; and so the average are exposed for only the latter half of the first calendar year. The Exits as well as the Entrances of subsequent years, are likewise assumed to occur uniformly during each separate calendar year. *Average Policy Years thus begin and end with the middle of Calendar Years;* and the average birthday is taken at the middle of the initial year.

The ratio of mortality for the first year has been a subject of discussion in the *Journal of the Institute;* but, as there stated, " it is difficult to devise a better plan;" and in practice, the regular formula for subsequent years has been generally applied to the first year, as will be presently exhibited.

Throughout the Tables I and II, the first column headed " Years of Insurance," 0, 1, 2, 3, etc. expresses the *Durations* found by subtracting the Year of Entry on the cards from the Year of Exit or termination. For future reference, the more definite scale, $0-\frac{1}{2}$, $\frac{1}{2}-1\frac{1}{2}$, $1\frac{1}{2}-2\frac{1}{2}$, etc. is also given in the right hand columns of Summary A and B, at the beginning of Tables I and II. As before described, assuming the entrances to occur uniformly during the twelve months of the initial calendar year, the average date of insurance or entry is taken at the middle of the year, when the " Years of Insurance " begin, as follows. The title " Years of Insurance " is synonymous with " Durations " and with " Policy Years."

CALENDAR YEARS.	YEARS OF INSURANCE.		EXISTING, DISCONTINUED, DIED.
Beginning.....	....	..	Insurances commence.
Middle........	Beginning.......	0	Average date of Entrance.
End..........	Middle..........	$\frac{1}{2}$	First Year's " Existing " record closes.
Middle........	End............	1	Average date of Deaths and Discontinued.
Middle........	Beginning.......	1	Survivors enter on second Policy Year.
End..........	Middle..........	$1\frac{1}{2}$	Second Year's " Existing " record closes.
Middle........	End............	2	Average date of Deaths and Discontinued.
Middle........	Beginning.......	2	Survivors enter on third Policy Year.
Etc..........	Etc....	$2\frac{1}{2}$	Third Year's " Existing " record closes.

SECTION V.

Notation and Annual Equations.

Let N = number of admissions during any year of Age.
     D =   "   "   Deaths during any year of Age.
     r =   "   "   Discontinuances during any year of Age.
     ε =   "   "   survivors entering on any year of Age.
     R =   "   "   Existing at the end of the year.

N_1, D_1, r_1, ε_1, R_1 = the like numbers for the next higher year of age, etc. These are here adopted from the short method of W. S. B. Woolhouse in the *Journal of the Institute*, Vol. 13, page 10.

$M = \varepsilon + \frac{1}{2}N - \frac{1}{2}(r+D)$ = number exposed at the middle of the year, if the changes occur uniformly. M can also denote the middle altitude of a trapezoid, whose base is unity or one year, and whose area represents the total exposure of the year. Assuming half the annual decrement to occur before, and the other half to occur after, the middle of the year, we have,

$$p = \frac{M - \frac{1}{2}D}{M + \frac{1}{2}D} = \text{the proportion that survive one year's exposure to Death.}$$

$$p' = \frac{M - \frac{1}{2}r}{M + \frac{1}{2}r} = \text{the proportion that survive one year's exposure to Discontinuance.}$$

$$p'' = \frac{M - \frac{1}{2}(r+D)}{M + \frac{1}{2}(r+D)} = \frac{\varepsilon_1 + R}{\varepsilon} = \text{the proportion that survive one year's exposure to both Death and Discontinuance.}$$

$$q = \frac{D}{M + \frac{1}{2}D} = 1 - p = \text{proportion that die in one year.}$$

$\beta = M + \frac{1}{2}D = \varepsilon + \frac{1}{2}N - \frac{1}{2}r =$ Exposed to Risk [of Death]. The last denominator $M + \frac{1}{2}D$ or β has been named the "Exposed to Risk," although it differs from the mean exposure M shown above.

$$q = \frac{D}{\frac{1}{2}(N-r)}, \text{ for the initial year of Entry or Duration 0.}$$

$$1 - p' = \frac{r}{M + \frac{1}{2}r} = \frac{r}{\beta + \frac{1}{2}r - \frac{1}{2}D} = \text{proportion that discontinue in one year.}$$

$$1 - p'' = \frac{r+D}{M + \frac{1}{2}(r+D)} = \frac{r+D}{\beta + \frac{1}{2}r} = \text{proportion of both deaths and discontinuances in one year.}$$

For Duration 0, $\varepsilon_0 = N = $ Sum of $(R+D+r)$, $\beta_0 = \frac{1}{2}(N - r_0)$,
   "   "   1, $\varepsilon_1 = N - (R_0 + D_0 + r_0)$, $\beta_1 = \varepsilon_1 - \frac{1}{2}r_1$,
   "   "   2, $\varepsilon_2 = \varepsilon_1 - (R_1 + D_1 + r_1)$, $\beta_2 = \varepsilon_2 - \frac{1}{2}r_2$,
   "   "   3, $\varepsilon_3 = \varepsilon_2 - (R_2 + D_2 + r_2)$, $\beta_3 = \varepsilon_3 - \frac{1}{2}r_3$,
     etc.   etc.   etc.

By eliminating ε, and by transposition, or substitution,

$$\beta_1 = 2\beta_0 - R_0 - D_0 - \frac{1}{2}r_1,$$
$$\beta_2 = \beta_1 - R_1 - D_1 - \frac{1}{2}r_1 - \frac{1}{2}r_2,$$
$$\beta_3 = \beta_2 - R_2 - D_2 - \frac{1}{2}r_2 - \frac{1}{2}r_3,$$

     etc.   etc.

$$R_0 = 2\beta_0 - \beta_1 - D_0 - \tfrac{1}{2}r_1,$$
$$R_1 = \beta_1 - \beta_2 - D_1 - \tfrac{1}{2}r_1 - \tfrac{1}{2}r_2,$$
$$\text{etc.} \qquad\qquad \text{etc.}$$

$$M_0 = \tfrac{1}{2}N - \tfrac{1}{2}(r_0 + D_0),$$
$$M_1 = 2M_0 - R_0 - \tfrac{1}{2}(r_1 + D_1),$$
$$M_2 = M_1 - R_1 - \tfrac{1}{2}(D_1 + r_1) - \tfrac{1}{2}(D_2 + r_2),$$
$$M_3 = M_2 - R_2 - \tfrac{1}{2}(D_2 + r_2) - \tfrac{1}{2}(D_3 + r_3).$$
$$\text{etc.} \qquad\qquad \text{etc.}$$

A method for carrying forward the Existing to their proportional terminations in the columns of Discontinued and Died, will be described hereafter in Section IX.

SECTION VI.

Transformation of Data.

The foregoing equations have been particularly serviceable in transforming the results, which had been wrought out by different Actuaries and Companies, to a uniform system. A brief memorandum of some of the operations may be useful for future reference. The Experience of one, designated as Company A, gave the values of N, β, and D for *Lives* at every age, with but an abstract of the values of r. After the latter had been interpolated for all ages, the Existing were then found from the above equations of R.

Having now obtained the elementary data for Lives, the omitted *Amounts* were next supplied by proportions wrought out for the Existing, Discontinued, and Died, separately at each age. Thus, taking the first two terms from the general experience of the other similar Companies, we have the simple statement, as R of the Lives is to R of the Amounts, so is R of the Lives in Company A, to the corresponding Amount at the same age.

The returns from another, which may be designated as Company B, gave the Deaths and Exposed to Risk by Policy years, accompanied by the following explanation. "The classification is by Calendar Years of Issue and Policy Years after Issue. In regard to fractions of years, a policy for $10,000 lapsed or discontinued at the end of $3\frac{1}{2}$ years stands *pro rata* in the fourth year as $5,000, etc. If a policy was terminated by Death, it was entered as at risk for the whole year, and entered as a death for the whole amount." In order to change to the forms of the card system, the data P, D in thousands of dollars were first added as follows. Here P denotes the Amount Exposed to risk in one Policy year, and D the corresponding Death Claims.

Age of Entry.	Values of P. 1st Policy Year.						
	1869	'70	'71	'72	'73	'74A	P.
14	....	1	....	...	6	....	7
15	5	....	....	....	....	1	6
16	....	....	...	....	..	....	....
17	5	....	....	5	1	1	12
18	6	....	1	8	....	....	15
19	5	....	....	3	....	7	15
....	...	....	....	....	....	....

Age of Entry.	P. 2d Policy Year.					
	1869	'70	'71	'72	'73A	P.
14	....	1	....	....	6	7
15	....	....	....	....	....	...
16	....	....	....	5	...	5
17	....	....	....	....	1	1
18	5	....	1	8	....	14
19	5	....	....	3	....	8
....	...	....	....	....	....	....

For any one Age of Entry, as 18 years, let D'_1, P_1, denote the Deaths and the Exposure of the 1st Policy Year; D'_2, P_2, the like quantities for the 2d Policy Year; and so on. Let us assume the entrants to begin, on an average, in the middle of the initial calendar year. Then if the deaths occur uniformly in each year, and D_0, D_1, D_2, ... denote the Deaths on the card system, we have

$$D_0 = \tfrac{1}{2}D'_1; \quad D_1 = \tfrac{1}{2}D'_1 + \tfrac{1}{2}D'_2; \quad D_2 = \tfrac{1}{2}D'_2 + \tfrac{1}{2}D'_3; \quad \text{etc.}$$

In like manner if R_0, R_1, etc. denote the Existing on the card system, at the end of Calendar years or the middle of Policy years, and Deaths were included as above described, we shall have by the middle ordinate of the trapezoid denoting the exposure of the policy year, restricted to the last columns denoted by '74A, '73A, '72A, ...

$$R_0 = P_1 - \tfrac{1}{2}D'_1; \quad R_1 = P_2 - \tfrac{1}{2}D'_2; \quad R_2 = P'_3 - \tfrac{1}{2}D'_3; \quad \text{etc.}$$

Lastly if r_0, r_1, r_2, ... denote the *Discontinued* on the card system, r_0 only is to be estimated, being about one-half, or rather 0.45 of r_1. It is evident that discontinuances and lapses will occur mostly at the end of policy years, that is, at the middle of calendar years, on the average. We also note that by adding and subtracting $\tfrac{1}{2}D'_1$, the middle ordinate $P_1 - \tfrac{1}{2}D'_1$ becomes P_1, at the beginning, and $P_1 - D'_1$ at the end of the policy year. Consequently P_2 is the value at the beginning of the next year; and the Existing R_0 were withdrawn (at the end of the calendar year) six months previous. Taking the difference, we have

$$r_1 = P_1 - D'_1 - R_0 - P_2; \quad r_2 = P_2 - D'_2 - R_1 - P_3; \quad \text{etc.}$$

After transformation of the Amounts given by Company B, in accordance with these three series of equations, investigated for the purpose, the corresponding normal number of Lives or Policies was then obtained conversely from the principle of proportions employed for Company A.

The records of a third Company, denoted as Company C, gave the Deaths and Exposed for both Lives and Amounts, according to Calendar years of exposure, with correction for fractional parts of the year. The age nearest to Jan. 1st had been taken as the Age of Entry. After the first Policy on any life, the subsequent policies or surrenders, had been regarded merely as increase or decrease of the first Policy. By aid of further statistics, the stated Loss actually paid, was corrected to the Loss as insured. The lives were assumed to enter the Company at the middle of the initial calendar year, on an average, and in this sense, at their real ages. The results annually wrought out by the Office, had been given in the form of summation tables of the quantities N, M, D, R, which, besides determining the final ratios of mortality, were sufficiently extensive for other purposes. In order to unite with the returns of other Companies, as here presented, it became necessary to resolve the results into their original or annual elements. A single example will illustrate the special process devised for this object.

Years of Insurance.	Probable Deaths	Ages.								
		. . .	. . .	34	35	36	37	38	. . .	. . .
0	136.33									
1	258.86									
2	230.55									
3	212.97									
4	198.11									
5	179.33									
. . .	. . . . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Probable Deaths.	2,283.48	. . .	. . .	52.56	55.37	57.83	60.04	61.33	. . .	. . .

The horizontal and vertical sums were thus given, and it was required to fill out the series of squares, with such compatible numbers as should make up these sums. Instead of resorting to equations of condition for five year periods, the squares were first filled out approximately, from the Experience of another similar Company. Their vertical sums, when compared with the true sums, gave a multiplier for each column, such that the vertical sums of products agreed with the true sums, shown at the foot of the columns. Next, the same products were added horizontally; their sums when compared with the actual sums in the left hand column, gave a new set of multipliers, such that the horizontal sums of the new products agreed with those stated in the left hand column respectively. The same products were next added vertically, to get new multipliers and products as first described, and so on. It proved to be a converging process, which terminated when the last multipliers became virtually 1; and the joint conditions of horizontal and of vertical summation were satisfactorily fulfilled. The resulting Probable Losses when divided by the same tabular probabilities previously used as multipliers to determine the Probable Loss, gave the corresponding values of M as required.

After this leading determination, different courses were suggested. Approximate values of D could readily be found by applying the known ratios of mortality to the values of M; and approximate values of R and r could then be derived from the foregoing Equations for M (page 26), by assuming the ratio of R to r to be the same as in the general experience of other similar Companies, at the same age and duration. Each equation would then have only one unknown quantity. And these approximate values could lastly be made to accord with the given sums by slight percentage corrections. But the work being already performed, the present sketch sufficiently indicates the methods of interpolation. The new converging process, which opened the way as above described, could be applied more extensively, as where the sums of the columns had been taken in the two directions vertically and diagonally.

SECTION VII.

Exposed to Risk.

After the original data had been reduced to the three forms of Existing, Discontinued, and Died, shown in Tables I and II, the next process was to fill out the columns of Exposed to Risk [of Death]. This peculiar term has already been defined under Notation, by the quantity β, or $M + \frac{1}{2}D$.

To explain the application,—in Table I Male Life, Age at Entry 33 years, for example, the Number of Entrants 40,498 at the head of the first columns, was found by adding the first three sums at the foot of the columns. And the Entrant Amount Insured $104,474,000 was found in like manner. Then by the preceding equations for β (page 25), half the number of entrants less half of 1,872 the discontinuances of the year 0, gives 19.313 years of exposure in the year 0. And the number of entrants N diminished by the sum of Existing, Discontinued, and Died of the Year 0, gave the surviving entrants $\cdot\varepsilon_1$, on the year 1. And ε_1 diminished by half the discontinued 6,484 of the year 1, gave β, or 32,927 Exposed to risk during the year 1. After the first year, the process is uniform, as follows.

FROM TABLE I.   AGE AT ENTRY 33 YEARS.

YEAR OF INSURANCE.	ENTRANTS LESS EXISTING, DISCONTINUED, AND DIED.	SURVIVING ENTRANTS.	SUBTRACT $\frac{1}{2}$ DISC'D.	EXPOSED TO RISK.
0		$\frac{1}{2}(40,498)$	$\frac{1}{2}(1,872)$	19,313
1	$40,498-(2,349+1,872+108)$	36,169	$\frac{1}{2}(6,484)$	32,927
2	$36,169-(2,181+6,484+219)$	27,285	$\frac{1}{2}(2,845)$	$25,862\frac{1}{2}$
3	$27,285-(1,776+2,845+218)$	22,446	$\frac{1}{2}(1,856)$	21,518
....	....	......	......	......

In the columns of Amounts, the Exposed to Risk [of Death] are found in the same manner. Thence, the ratios of mortality, and of discontinuance, or of both combined, can be determined by the preceding formulas. The collective data will be found unusually complete for these, as well as other inquiries.

The preceding principles require that, after passing from Deaths to the Ratios of mortality, or to the life table, the current Ages on the plan of "nearest birthday" are to be diminished by $\frac{1}{2}$ year, as if changing the Ages from the middle to the beginning of the year of the ratio. Thus $29\frac{1}{2}$ current is changed to 29 years. The English custom of age "next birthday" would require a similar, final change of one year, reducing the current age 30 to 29, for example, as noted in the first volume of the Institute Experience, page 18.

SECTION VIII.

Comparative Results.   Ratios of Mortality and of Loss to the Year 1874.

The collection of the Thirty Life Offices represents an aggregate of about 1,177,000 original policies. But under the rules of reduction, before described, these were adjusted to the net number stated below, comprising above a million of regular observations. It will be seen that the number of female entrants was relatively small; the total proportion being twenty-two males to one female insured. The ages of entry group themselves above and below the mean age of thirty-five, the half of "three-score years and ten."

NUMBERS.	MALES.	FEMALES.	TOTAL.
Number of Entrants........................	982,734	44,795	1,027,529
Whole number of Deaths........	44,485	2,058	46,543
Average Age of Entry for Lives, years.......	35.23	34.46	35.20
" " " " Amounts, years....	36.27	34.87	36.23

PROPORTIONS :	EXISTING.	DISCON-TINUED.	DIED.	TOTAL.
Of 982,734 Male Entrants..................	53.7	41.8	4.5	100.0
" 44,795 Female Entrants.........	49.7	45.7	4.6	100.0
" 1,027,529 Male and Female Entrants.......	53.5	42.0	4.5	100.0

Dividing now the corrected number " Exposed to Risk " by the whole number of Entrants, we find at the epoch of the Experience in 1874, the *Mean Duration of Policies* was 4.36 years.   Adding this to the Average Age of Entry 35.23 years, we find that the Lives Insured had attained the Average Age of 39.6 years at the epoch.   In the older Experience of the Twenty British Offices, the Mean Duration of Policies at the epoch in 1863 was 9.12 years ; the average Age of Entry was 35.3 years ; and the average age attained by all the lives insured, was 44.4 years.   Resuming the Experience of the American Offices, we have next the following results.

MEAN PERCENTAGE OF MORTALITY ACCORDING TO THE YEAR OF INSURANCE. ALL AGES.   TO 1874.

YEAR OF INSURANCE.	MALE LIFE.		FEMALE LIFE.		YEAR OF INSURANCE.
	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	
0	0.63	0.63	0.86	0.93	0
1	0.81	0.85	1.08	1.12	1
2	0.92	1.00	1.06	1.09	2
3	1.00	1.06	1.14	1.27	3
4	1.09	1.19	1.16	1.32	4
5	1.13	1.23	1.28	1.43	5
6	1.17	1.27	1.40	1.54	6
7	1.22	1.34	1.33	1.35	7
8	1.20	1.27	1.06	1.16	8
9	1.23	1.25	1.73	1.54	9
....	....	....	....	....	....
Total,	1.03	1.10	1.16	1.23	Total.

The preceding abstract, from Tables III and IV (B), shows how many die out of 100 Exposed to one year's mortality, the average being above one per cent.   In the " Year of Insurance " 0, as before explained, the observations extend, on the average, over half a year from the day of entry, although the percentage is the annual rate. The " Year of Insurance " 1 extends from $\frac{1}{2}$ a year to $1\frac{1}{2}$ years from entry ; and so on.

The principal effect of the medical selection is more correctly exhibited on Pages 31–33, *for Equal Ages of Exposure ;* the average rate being generally attained within $2\frac{1}{2}$ years.   At the same time, the counter selections of the insured are proceeding by changes of amount, so that the final claims are generally about four per cent. in excess of what would be the loss for equal Policies or amounts insured.—Compare p. 192.

The computation of the following summary for Male Life may be thus illustrated. For " Years of Insurance " 0, for example, we add the Deaths and Exposed in Table I for *Ages of Exposure* 30, 31, 32, 33, 34, 35 Years, which give 89, 90, 95, 108, 99, 94, or a total of 575 Deaths, and in like manner 115,458.5 Exposed to Risk.   These Deaths divided by the Exposed give 0.498 per cent. as stated in the Table on next page.   The six middle Ages current, strictly represent the period $29\frac{1}{2}$–$35\frac{1}{2}$; the central five years of which are 30–35 years ; the fraction being excluded only to facilitate future comparisons.   From the true middle age $32\frac{1}{2}$, dropping $\frac{1}{2}$ year leaves the middle initial age 32, as before specified.   It will be seen that the ages bordering on the five-year periods, as 25, 30, etc. are added twice.   The ratios of Death Claims were found in the same manner, subject in case of future graduation to a small correction shown in Section X, 3.

For the summary of Female Life, a parallel method was employed; the data being first added in regular five-year periods, such as 30, 31, 32, 33, 34; then 35, 36, 37, 38, 39, etc., or $29\frac{1}{2}$–$34\frac{1}{2}$; $34\frac{1}{2}$–$39\frac{1}{2}$; etc. To advance these periods $\frac{1}{2}$ year, that is, to 30–35; 35–40, etc., one-tenth of the increase from one quinquennial to the next, was added to the former ratio. Thus for the periods (0) $24\frac{1}{2}$–$29\frac{1}{2}$, $29\frac{1}{2}$–$34\frac{1}{2}$, the ratios of Deaths per cent. are $27 \div 3956$ and $36 \div 4258$ or .6825 and .8455. One-tenth of their difference .0163 added to the former gives .6988 or .699 as stated in the abstract on next page under 25–30 at the head of the column. As a method of adjustment, there appears little or no ground of preference between this and the former operation for Male Life, with a fair measure of regularity in the data.

MALE LIFE. DEATHS AND CLAIMS PER CENT. TO 1874.

YEARS OF INSURANCE.	AGES OF EXPOSURE.							
	15–20		20–25		25–30		30–35	
	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.
0	.735	.597	.571	.446	.481	.442	.498	.485
1	.673	.625	.677	.620	.607	.603	.617	.613
2	.802	.746	.782	.846	.691	.735	.691	.764
3	.634	.544	.685	.626	.777	.737	.744	.758
4	.590	.776	.740	.719	.811	.868	.833	.854
5	.400	.421	.899	1.038	.796	.885	.827	.914
6	1.288	.305	1.223	.650	.879	.905	.801	.882
7	2.116	1.227	1.003	1.209	.860	.879	.837	.827
8	.....	.....	.306	.548	.812	.897	.799	.856
9	.....	.....	1.022	.337	.561	.459	.801	.841
0—4	.709	.636	.672	.620	.647	.645	.666	.683
5—9	.725	.432	.967	.910	.823	.879	.817	.879
10–14	.....	.....	1.890	1.572	1.295	.850	1.037	1.194
15–19	.....	.....	.....	.....	.862	.386	1.243	1.634
20–24	.....	.....	.....	.....	.....	.....	2.778	1.105
Total,	.709	.627	.689	.634	.671	.673	.705	.732
	35–40		40–45		45–50		50–55	
0	.520	.528	.663	.666	.840	.802	1.186	1.354
1	.709	.831	.845	.839	1.034	1.031	1.322	1.309
2	.785	.871	.931	.942	1.126	1.107	1.442	1.495
3	.852	.884	.958	.950	1.096	1.118	1.403	1.525
4	.920	1.000	1.019	1.108	1.184	1.252	1.469	1.512
5	.865	.956	1.045	1.124	1.185	1.206	1.392	1.424
6	.914	.963	1.028	1.071	1.145	1.241	1.557	1.489
7	.946	1.003	1.007	1.038	1.127	1.291	1.506	1.611
8	.789	.843	1.013	1.020	1.099	1.102	1.525	1.517
9	.869	.918	.900	.961	1.036	1.014	1.568	1.398
0—4	.758	.829	.892	.905	1.069	1.074	1.379	1.442
5—9	.883	.948	1.013	1.061	1.133	1.194	1.497	1.488
10–14	.933	.936	1.007	1.015	1.185	1.309	1.423	1.467
15–19	.929	1.006	.903	1.031	1.134	1.212	1.379	1.453
20–24	2.201	2.010	1.135	1.566	1.019	1.067	1.460	1.567
25–29	.....	.....	3.150	6.349	1.393	2.534	1.828	2.653
Total,	.802	.866	.938	.962	1.102	1.138	1.426	1.469

MALE LIFE. DEATHS AND CLAIMS PER CENT. TO 1874.

YEARS OF INSURANCE.	AGES OF EXPOSURE.							
	55–60		60–65		65–70		70–75	
	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.
0	1.550	1.739	2.425	2.429	3.200	5.010	4.138	3.003
1	1.851	1.806	2.721	2.703	3.142	2.713	4.902	5.066
2	1.887	2.071	2.644	2.423	3.460	3.821	3.663	4.484
3	2.021	2.113	2.867	2.886	3.610	4.169	3.338	2.193
4	2.158	2.018	2.913	3.164	3.689	3.899	3.464	3.136
5	2.077	2.117	3.008	2.820	3.811	3.797	6.452	4.626
6	1.992	2.121	2.761	3.402	3.706	4.341	6.656	6.849
7	2.079	2.121	2.903	3.153	4.631	4.285	4.928	4.937
8	2.121	2.179	2.585	2.727	3.819	3.339	5.405	6.438
9	2.074	2.060	2.724	3.074	3.537	4.140	7.355	7.901
0—4	1.926	1.968	2.756	2.767	3.482	3.809	3.726	3.437
5—9	2.064	2.122	2.820	3.043	3.921	3.998	6.109	6.027
10–14	1.824	1.920	2.619	2.583	3.794	3.819	6.014	5.531
15–19	1.875	2.037	2.681	3.005	4.211	4.624	5.037	4.934
20–24	1.790	2.053	2.775	3.214	4.523	5.494	6.131	6.396
25–29	1.727	1.708	2.871	2.940	3.727	4.098	6.061	6.145
Total,	1.942	2.017	2.756	2.899	3.934	4.236	5.631	5.550

YEARS OF INSURANCE.	75–80		80–85		85–90		All Ages.	
	DEATHS	CLAIMS	DEATHS	CLAIMS	DEATHS	CLAIMS	DEATHS	CLAIMS
0—4	5.096	5.150	14.286	9.524	. . . . .	. . . . .	.881	.937
5—9	8.430	8.066	3.636	1.550	. . . . .	. . . . .	1.179	1.267
10–14	9.707	8.808	9.677	9.160	. . . . .	. . . . .	1.171	1.433
15–19	7.942	7.119	11.834	13.598	4.445	5.333	1.679	1.798
20–24	8.234	6.943	12.012	9.825	21.239	25.478	2.339	2.582
25–29	10.336	9.848	11.282	9.773	20.779	18.065	2.943	3.173
Total,	8.483	7.724	11.332	10.342	16.667	17.757	1.028	1.096

FEMALE LIFE. DEATHS AND CLAIMS PER CENT. TO 1874.

YEARS OF INSURANCE.	AGES OF EXPOSURE.							
	15–20		20–25		25–30		30–35	
	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.	DEATHS PER CENT.	CLAIMS PER CENT.
0	.808	.784	1.062	1.042	.699	.621	.840	1.104
1	.585	.463	.952	.944	1.056	1.004	1.076	1.148
2	.600	.396	1.049	1.031	1.019	1.091	.946	.814
3	1.415	2.307	1.122	1.383	1.023	1.113	1.139	1.292
4	. . . . .	. . . . .	.993	.526	1.047	1.561	1.018	1.085
5	. . . .	. . . .	.380	.455	1.175	1.054	1.010	.882
6	. . . .	. . . .	1.894	.924	1.065	1.231	1.372	1.491
7	. . . .	. . . .	1.020	1.193	1.184	.959	1.023	.713
8	. . . .	. . . .	1.916	1.674	2.083	6.180	1.250	1.206
9	. . . .	. . . .	. . . . .	. . . . .	. . . . .	. . . . .	2.071	1.388
0—4	.714	.707	1.024	1.017	.971	1.015	1.009	1.080
5—9	. . . .	. . . .	.991	.764	1.180	1.419	1.199	1.081
10–14	. . . .	. . . .	. . . .	. . . .	.949	2.110	1.013	.948
15–19	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	3.310	3.124
Total,	.676	.671	1.108	.999	.997	1.065	1.052	1.084

FEMALE LIFE.   DEATHS AND CLAIMS PER CENT.   TO 1874.

| Years of Insurance. | Ages of Exposure. | | | | | | | |
| | 35–40 | | 40–45 | | 45–50 | | 50–55 | |
	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.
0	.795	.946	.838	.955	.975	1.013	1.193	.842
1	1.157	1.322	1.101	1.007	.899	.763	1.064	1.545
2	.917	1.080	1.009	1.027	.806	.724	1.496	1.570
3	.916	.785	1.108	1.159	1.239	1.399	1.179	1.470
4	.789	.780	1.145	1.197	1.124	1.563	1.550	1.524
5	1.086	1.145	1.090	1.390	1.393	1.533	1.804	1.943
6	1.264	1.383	1.097	1.027	1.287	1.656	1.601	1.627
7	.937	1.078	.909	1.118	1.497	1.332	1.427	1.470
8	1.509	1.531	.410	.479	.351	.233	.954	.976
9	.913	.868	1.456	1.646	1.257	.963	1.941	1.481
0—4	.946	1.030	1.051	1.064	.997	1.052	1.295	1.441
5—9	1.142	1.221	1.000	1.147	1.239	1.312	1.568	1.594
10–14	.843	.839	1.294	1.435	1.027	.994	1.189	1.153
15–19	2.440	3.128	1.031	1.252	.830	.766	1.299	1.509
20–24	.....	.....	.940	.678	1.116	.986	.826	.590
25–29	.....	.....	.....	.....	2.564	1.786	.....	.....
Total,	1.002	1.082	1.049	1.104	1.059	1.103	1.341	1.432

| Years of Insurance. | 55–60 | | 60–65 | | 65–70 | | 70–75 | |
	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.
0	1.388	1.932	.....	.....	.....	.....	28.571	18.182
1	1.492	1.964	1.957	1.541	4.032	2.899	.....	.....
2	1.862	2.149	3.434	3.301	4.496	6.344	6.250	5.000
3	1.351	1.962	2.125	2.438	4.445	8.375	.....	.....
4	1.898	1.743	3.173	4.035	5.489	8.595	3.279	1.482
5	2.067	2.521	3.479	5.128	3.509	4.301	.....	.....
6	1.936	2.411	1.651	2.953	5.368	4.989	10.127	14.595
7	2.867	2.842	3.042	3.603	6.017	6.049	2.899	5.042
8	1.145	0.878	2.406	1.989	3.429	1.250	.....	.....
9	2.035	1.242	2.160	2.316	7.429	8.154	17.168	10.222
0—4	1.601	1.950	2.418	2.590	4.211	6.038	4.407	3.100
5—9	2.057	2.215	2.650	3.585	4.799	4.722	5.458	6.171
10–14	1.621	1.819	1.847	2.100	4.533	4.643	5.262	4.905
15–19	2.372	1.877	1.207	2.561	2.367	2.124	3.112	6.316
20–24	2.251	2.093	3.070	2.758	3.292	4.466	5.377	7.292
25–29	1.695	1.064	.....	.....	.....	.....	.....	.....
Total,	1.831	2.015	2.385	2.822	4.039	4.937	4.783	5.617

| Years of Insurance. | 75–80 | | 80–85 | | 85–90 | | All Ages. | |
	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.	Deaths per cent.	Claims per cent.
0—4	14.909	14.107	40.000	28.571	.....	.....	1.060	1.135
5—9	8.207	8.523	23.000	16.250	50.000	50.000	1.329	1.423
10–14	25.352	17.391	.....	.....	.....	.....	1.373	1.439
15–19	6.203	8.516	9.091	24.000	.....	.....	1.545	1.876
20–24	21.536	23.482	31.666	35.952	16.667	16.667	2.179	2.270
25–29	.....	.....	.....	.....	.....	.....	0.717	0.431
Total,	14.587	14.428	20.128	22.013	16.282	21.363	1.158	1.234

Such are some of the effects in the aggregate. But a more exact impression will be given by glancing down the columns of these tables, and noting the incessant fluctuations of the rates. For instance, in the periods 50–55, 65–70 the claims per cent. of the first year have exceeded those of the second year for Male Life; and in Female Life, the same feature prevails as often as its opposite, for all ages. It should be noted that in each vertical column, the percentages refer to different groups of persons insured. The percentages for the *same* group proceed forward and downward in a *diagonal* direction, for five-year periods. Thus for the same class of females entering at the Ages 25–30, the successive Claims per cent. in five-year periods are given as 1.015, 1.081, 0.839, 1.252, 0.986, ...

It may be proper to observe that in the national census, the mortality of females, in the great mass, is less than that of the male population. In life insurance statistics, the same feature would undoubtedly prevail, if a fair representation of the female class in the community were insured. But in practice, the class that actually insure have so many unhealthy lives, especially in the period of maternity, that the total claims per cent. of females (1.23) have very considerably exceeded the rate (1.10) of insured males. The principal causes of this difference will be developed hereafter in the Medical Statistics. Table XIV (B) indicates especially the risk incident to the birth of the first child, which is well known to be far greater than at any subsequent delivery, with compensations in the future conditions of life. Compare also results from the Census of Scotland in the *Journal of the Institute of Actuaries*, Vol. 22, page 233.

COMPARISON OF DEATHS PER CENT. FROM SEVERAL TABLES OF MORTALITY.

AGES.	30 AMERICAN OFFICES.			20 BRITISH OFFICES.			AMERICAN LIFE, 1858.	CARLISLE TABLE.
	MALES.	FEMALES.	DIFF.	MALES.	FEMALES.	DIFF.	M. AND F.	M. AND F.
15–20	0.71	0.68	+.03	0.47	0.76	−.29	1.31	0.68
20–25	0.69	1.10	−.41	0.69	0.85	−.16	1.07	0.70
25–30	0.67	1.00	−.33	0.69	1.18	−.49	0.78	0.82
30–35	0.71	1.05	−.34	0.82	1.13	−.31	1.04	1.01
35–40	0.80	1.00	−.20	0.95	1.21	−.26	0.98	1.09
40–45	0.94	1.05	−.11	1.07	1.28	−.21	0.83	1.41
45–50	1.10	1.06	+.04	1.36	1.39	−.03	1.13	1.44
50–55	1.43	1.34	+.09	1.74	1.57	+.17	1.55	1.52
55–60	1.94	1.83	+.11	2.40	2.02	+.38	1.87	2.20
60–65	2.76	2.39	+.37	3.48	2.86	+.62	4.34	3.68
65–70	3.93	4.04	−.11	5.02	4.37	+.65	4.15	4.45
70–75	5.63	4.78	+.85	7.33	6.84	+.49	5.19	6.97
75–80	8.48	14.59	−6.11	11.00	10.66	+.34	8.48	10.54
80–85	11.33	20.13	−8.80	16.52	12.51	+4.01	. . . .	13.86
85–90	16.67	16.28	+.39	22.35	22.82	−.47	. . . .	19.92
90–95	. . . .	. . . .	. . . .	32.73	22.68	+10.05	. . . .	28.61
Deaths,	44,485	2,058		20,521	3,335		750	1,840
Entrants,	982 734	44,795		130,243	16,604		19,725	. . . .

This Table represents the percentages from original observations simply. Graduation would require a small correction described in Section X, 3. In the columns of the Thirty Offices, under the age of forty-five, the mortality of females will be seen to exceed that of males by at least one-third part, for a considerable extent; from the age of forty-five to sixty-five, the order is reversed, and the mortality of males exceeds that

of females by a much smaller difference relatively. Above sixty-five, the female experience is small in numbers, and fluctuating in value. Yet in the larger experience of British females from sixty-five to eighty, the excess of male mortality is still continued, though reversed afterward.

The last column but one, is derived from the published Report of the Experience of the Mutual Life Insurance Company of New York to Feb. 1, 1858, pages 10, 11. From its middle ages, between thirty and sixty, Mr. Sheppard Homans, the Company's Actuary, constructed the common American Experience Table of 1858, with some modifications.

Passing now to the last column, we note that all the percentages of the Carlisle Table exceed those of male life in the Thirty Offices Experience. And the percentages of the Twenty British Offices, male as well as female, with one or two exceptions at the beginning, show a similar excess over that of American insured males.

SECTION IX.

Continuation of the Experience of 1874 to Final Series.

The record of a Life Office noted upon the card returns will now be regarded as an inventory of the state of its business up to that particular time; from which the average for a longer series of years remains to be determined.

The applications of the Life Table to the current business of Insurance, whether to the surrender or change of policies, or to reserves, all presuppose that such Life-Table is based on *terminated* experience. In the analogous problem of the theory of probabilities, where the game is stopped prematurely, it is proved that the stakes should be divided among the players, in proportion to their probabilities of winning. Although the game stops, the determination of the several portions evidently depends on a knowledge of the chances, or law of the game when played through.

In the present case, the returns of 1874 comprise 549,418 Existing policies, of which the record closes before their future experience is determined. The column of Existing in Tables I and II now represents only first experiences, cut into dissimilar portions by the end of the 1st, the 2d, and other years after the medical examination, according to the year chosen for making out the cards or returns. Had the canvass of the office registers been deferred fifteen or twenty years, the most of the policies or lives would evidently have passed to their termination, and would have been returned as Discontinued or Died. And this mature experience, including the present returns, would have furnished the genuine elements for constructing the Life Table.

But not to wait for such supplementary experience by natural termination, we have found that it can be approximately supplied by carrying forward *the Existing to their proportional terminations in the columns of Discontinued and Died; and the same for Amounts Insured and Claims.* The present experience down to 1874 will give the requisite multipliers, and the products so found, may be conveniently termed *Final Series.*

Let us here investigate the weights or multipliers for this purpose. On page 25 is a formula assigning the probability p'' of surviving one year's exposure to *both* death and discontinuance. Hence from any age of Entry in Tables I and II we can determine the surviving entrants, N, Np_1''. $Np_1''p_2''$, ... of Final Series denoted by N, ε'_1, ε'_2, ... as they would be, if the present Existing, all proceeded to their terminations in Discontinuance or Death. And the annual differences, $N - \varepsilon_1'$, $\varepsilon_1' - \varepsilon_2'$, etc. are

evidently multipliers of the corresponding sums of discontinued and died on the same line of Table I. Hence their respective ratios will give the required weights or multipliers (w) of Tables III and IV.

Thus in the accompanying illustration, the first columns of Existing, Discontinued and Claims are simply the sums of the corresponding Amounts from Table I in Thousands of Dollars under Ages of Entry 36 and 37, (mean age 36½). The product of these (except Existing), by the Multiplier opposite in the last column, gives the Discontinued Amounts and Claims, (which now include the Existing carried forward), under Final Series.

AMOUNTS FROM TABLE I. AGES AT ENTRY 36 AND 37 YEARS.

YEARS OF INSURANCE.	EXPERIENCE ENDING 1874.				FINAL SERIES.				
	EXISTING (R).	DISCONTINUED.	CLAIMS.	ENTRANTS (ε).	ENTRANTS (ε').	DISCONTINUED.	DEATH CLAIMS.	EXPOSED TO RISK.	MULTIPLIER (w).
0	11,763	7,443	457	196,462	196,462	7,443	457	94,509.5	1.0000
1	10,058	27,369	1,743	176,799	188,562	29,181	1,859	173,971.5	1.0665
2	8,433	15,564	1,250	137,637	157,522	17,813	1,431	148,615.5	1.1445
3	7,692	10,655	959	112,390	138,278	13,109	1,180	131,723.5	1.2304
4	8,705	7,753	916	93,084	123,989	10,327	1,220	118,825.5	1.3320
5	9,533	5,665	922	75,710	112,442	8,414	1,369	108,235	1.4852
6	9,629	3,433	665	59,590	102,659	5,914	1,146	99,702	1.7228
7	8,991	2,617	470	45,863	95,599	5,455	980	92,871.5	2.0845
8	7,915	1,508	366	33,785	89,164	3,980	966	87,174	2.6392
9	5,659	707	217	23,996	84,218	2,481	762	82,977.5	3.5098
10	3,659	496	179	17,413	80,975	2,307	832	79,821.5	4.6505
11	2,427	330	224	13,079	77,836	1,964	1,333	76,854	5.9515
12	1,107	191	149	10,098	74,539	1,410	1,100	73,834	7.3819
13	852	167	113	8,651	72,029	1,391	941	71,333.5	8.3264
14	937	142	124	7,519	69,697	1,316	1,149	69,039	9.2700
15	730	78	78	6,316	67,232	830	830	66,817	10.645
16	596	57	98	5,430	65,572	688	1,184	65,228	12.076
17	339	44	77	4,679	63,700	599	1,050	63,460	13.615
18	341	37	59	4,219	62,051	544	868	61,779	14.709
19	390	40	55	3,782	60,639	641	881	60,318.5	16.035
20	273	45	49	3,297	59,117	807	879	58,713.5	17.931
21	196	16	53	2,930	57,431	313	1,037	57,274.5	19.602
22	198	31	74	2,665	56,081	652	1,557	55,755	21.044
23	264	17	56	2,362	53,872	388	1,278	53,678	22.808
24	347	6	69	2,025	52,206	155	1,783	52,128.5	25.781
25	477	3	48	1,603	50,268	94	1,504	50,221	31.362
26	377	20	30	1,075	48,670	903	1,354	48,218.5	45.277
27	345	3	33	648	46,413	215	2,361	46,305.5	71.618
28	160	....	11	267	.....	....	....	....	.....
29	35	....	1	96	....	....	....	....	......
30	56	....	1	60	.....	....	....	....	......
32	....	....	1						
38	....	....	2						
	102,484	84,429	9,549						

The first column of Entrants (ε) is readily computed by the formula of page 25, preparatory to obtaining the values of p'' by the formula there given.

$$\varepsilon'_1 = \varepsilon' p''. \qquad w = \frac{\varepsilon'}{\varepsilon}. \qquad p'' = \frac{R + \varepsilon_1}{\varepsilon}. \qquad r' = wr. \qquad D' = wD.$$

Here ε_1 denotes the entrants on the line or space next below that of the existing R and entrants ε. Multiplying N or 196,462 in this example by the first value of p'' gives

188,562, that is, the second value of ε'; and this by the next value of p'' gives the next value of ε'; and so on. The entrants ε' are here computed through 27 years, omitting the rest on account of the smallness and irregularity of the last data. Now the first difference of column ε' or 7,900 divided by the sum of the first Discontinued and Claims $7,443 + 457$ gives 1, the first multiplier in column (w). The second difference of ε' or 31,040 divided by $27,361 + 1,743$ gives 1.0665 the second multiplier in column (w), and so on.

Another Solution. Since Entrants (ε) always commence where Existing (R) end, at the beginning of any one year, we have first the proportion ; Entrants : Discontinued in the following twelve month :: Existing : proportional Discontinued. The sum of the second and fourth terms gives the *Discontinued* of Final Series, on the same line of the Table. And the Deaths of Final Series are found in like manner. Adding the third term to the Existing at the beginning of the next year, and then subtracting the two-fourth terms of Discontinued and Deaths just found, will give the entire surviving Existing from previous years, which will be the third term of the proportions for the next year, and so on.

Exposed to Risk. After applying either solution, the Discontinued and Deaths so found, will give the Exposed to Risk, in Final Series through the usual formula on page 25, by making the Existing (R) to be zero. Or in a different way, the Exposed to Risk may be found by multiplying the Exposed to Risk in the first series of 1874, by the same multiplier (w) that is used to change the Discontinued and Died on the same line to Final Series, from Tables I or II. This implies that *the percentages of Death and Discontinuance, but not their absolute numbers, are virtually alike on the same line of the series of 1874, and of Final Series.* This agreement is shown in the following examples, computed with five-place logarithms, from Amounts Insured.

ELEMENTARY CLAIMS PER CENT.

YEARS OF INSUR-ANCE.	AGES OF ENTRY 36 AND 37.		AGES OF ENTRY 56 AND 57.		YEARS OF INSUR-ANCE.	AGES OF ENTRY 36 AND 37.		AGES OF ENTRY 56 AND 57.	
	(1874).	FINAL SERIES.	(1874).	FINAL SERIES.		(1874).	FINAL SERIES.	(1874).	FINAL SERIES.
0	0.484	0.484	1.352	1.352	13	1.319	1.319	7.816	7.817
1	1.069	1.069	1.852	1.850	14	1.665	1.664	4.847	4.850
2	0.963	0.963	2.206	2.206	15	1.243	1.242	3.170	3.175
3	0.896	0.896	2.436	2.436	16	1.814	1.815	4.248	4.249
4	1.027	1.027	3.125	3.123	17	1.653	1.656	11.007	11.012
5	1.265	1.265	2.761	2.760	18	1.405	1.405	0.899	0.899
6	1.149	1.149	4.243	4.240	19	1.462	1.461	9.848	9.852
7	1.055	1.055	3.716	3.718	20	1.496	1.497	10.687	10.674
8	1.108	1.108	3.200	3.198	21	1.814	1.811	5.066	5.072
9	0.918	0.918	3.237	3.235	22	2.793	2.793	19.954	19.914
10	1.043	1.042	4.200	4.201	23	2.380	2.381	7.233	7.229
11	1.735	1.734	5.478	5.488	24	3.413	3.420	4.396	4.412
12	1.490	1.490	5.071	5.071	25	2.997	2.995	13.123	13.115

Weights. The foregoing system of multipliers (w) will be seen to coincide with the method of weights, used in the process of average. It is evident that the weights (w) have the same relation to a life table designed for questions of population, without interest,—that *discounted weights* $(w \cdot v^n)$, where n denotes the "Years of Insurance," have to a life table designed to give the well known Commutation Columns, for different rates of interest.

Accordingly, discounted weights $(w.\, v^n)$, assuming v to be $1 \div 1.04$, have been preferred in Tables III and IV, for determining the Claims of Final Series. In consequence of large irregularities in the statistics of Female Life, only the mean weights, (w) and $(w.\, v^n)$ were tabulated by their logarithms in Table IV (C). Deferring further explanations, and the construction of life tables to Part II, we subjoin an example of the preparatory operation for a single Age of Exposure of Male Life; the weights of Table III being changed from (w) to $(w.\, v^n)$.

AGGREGATE CLAIMS PER CENT. EXAMPLE. AGE OF EXPOSURE $24\frac{1}{2}$ TO $25\frac{1}{2}$.

YEARS OF INSURANCE.	AGE OF ENTRY.	LOG'M WEIGHT.	(1874).		FINAL SERIES.	
			CLAIMS.	EXPOSED.	CLAIMS.	EXPOSED.
0	25	0.0000	168.0	36,205.0	168.0	36,205.0
1	24	0.0142	305.0	50,185.0	315.2	51,856.0
2	23	0.0318	257.0	30,560.5	276.5	32,885.0
3	22	0.0510	111.0	17,851.0	124.8	20,077.0
4	21	0.0908	68.0	9,781.0	83.8	12,056.0
5	20	0.1348	52.0	4,374.5	70.9	5,966.2
6	19	0.1938	18.0	2,079.5	28.1	3,249.4
7	18	0.3009	14.0	951.0	28.0	1,901.5
8	17	0.4288	6.0	448.0	16.1	1,202.5
9	16	0.5670	1.0	227.5	3.7	839.7
10	15	0.6271	1.0	93.0	4.2	394.1
11	14	0.6781	1.0	67.0	4.8	319.3
12	13	0.6875	....	8.0	....	38.9
13	12	0.6559	....	11.5	....	52.1
....	....	....	....	....	....	....
Sum...			1,002.0	152,842.5	1,124.1	167,042.7
Claims per cent........................... 0.656					0.673	

SECTION X.

Notes on Graduation. Short Method for the Expectation of Life. Graduation by Formula and by Divided Differences. Loss relative to Term and other species of Insurances.

In further preparation for the construction of life tables in Part II, and other applications, the following notes of investigation are here placed on record. To correct for minor irregularities in the data, the observations may be grouped in five or ten-year periods. And from these five or ten-year sums, the annual values are again derived in a more regular and continuous series, by the process of graduation. This may be done in several ways.

1. The Graphic Method. On a base line representing years, or one of the two dimensions, set off distances corresponding to the given periods of age. Each of these distances is made the base of a rectangle, whose altitude is the average obtained by dividing the respective group of observations by its number of years. Having plotted this series of rectangles, whose upper contour forms a broken line, draw with a free

hand, a mean curve to supersede the broken line. This curved line must be drawn as little curved as the conditions admit of, and never change its direction abruptly. It will generally cut off a triangular space from one corner of each rectangle, and by compensation take from without, an equal space above the next corner of the rectangle. A preliminary curve is often drawn in pencil, and then successively adjusted by measuring, till the spaces exterior and interior to each rectangle are made equal. Finally, the ordinates of the curve measured year by year, give the graduated series required.

The living and the deaths for the Carlisle Table were graduated separately by this method, as described in Milne on Annuities and Insurances, Vol. I, page 100, (London, 1815). In respect to the vital statistics of the city of Carlisle and other places, he observes, it is very desirable that the exact numbers be given monthly for the first three months after birth; quarterly for the remaining three quarters of the first year of age; and after that, separately for the 2d, 3d, 4th and 5th years of age. And then intervals of five years to the extremity of life may do very well. And if the number of inhabitants be very considerable, intervals of ten years may be employed after the age of twenty or thirty.

2. *Short Method.* When life tables have once been formed by the graphic or other correct method, they may furnish corrections to shorten future applications. From the three life tables constructed by Milne, Vol. II, pages 404, 405, 564, 534, 566, we have derived for future reference, the following method for passing directly from the original data, to an outline of the Expectations of Life. And the same process might easily be adapted to Life Annuities. At the age of 80 years, the Expectation of Life is generally 5 years, more or less; and the deviations of the Expectations, and the Logarithms of the probabilities of life, from their mean values, appear very nearly proportional to each other, in different Tables. On this clue, are founded the equations below, which give a close approximation to the Relative and to the True Expectation at the age of 80. From the Relative Expectation at 80, we derive the Relative values at 70, 60, 50 . . . . 5 years, to which a small correction is to be added to give the true Expectations.

EXAMPLE FROM THE ORIGINAL DATA OF THE CARLISLE TABLE.

PERIOD n.	LIVING L.	DEATHS D.	$n \times \lambda \dfrac{L - \frac{1}{2}D}{L + \frac{1}{2}D}$	AGE.	EXPECTATION.		DIFFERENCE.			COR.
					CALC'D.	TRUE.	CARL.	S. M.	S. F.	
0– 5	9,868.5	812	$\overline{1}$.816225	0	. . . .	38.72	. .	. . .	. . . .	. . . .
5– 10	8,703	89	1.977795	5	51.26	51.25	−.01	−.02	+.02	−.04
10– 15	6,853.5	34	1.989230	10	48.85	48.82	−.03	+.01	+.01	−.01
15– 20	6,471	44	1.985235	15	45.02	45.00	−.02	00	+.02	0
20– 30	12,730.5	96	1.96725	20	41.49	41.46	−.03	00	+.03	0
30– 40	8,406	89	1.95402	30	34.35	34.34	−.01	−.01	+.01	0
40– 5)	8,226	118	1.93770	40	27.63	27.61	−.02	00	+.03	0
50– 60	5,638.5	103	1.92067	50	21.13	21.11	−.02	−.01	+.02	$\frac{1}{120}$ C
60– 70	4,194	173	$\overline{1}$.82083	60	14.37	14.34	−.02	+.01	+.03	$\frac{1}{60}$ C
70– 80	1,831.5	152	1.63936	70	9.22	9.18	−.04	+.05	00	$\frac{1}{10}$ C
80– 90	558	98	1.23529	80	5.46	5.51	+.05	+.01	−.05	C
90–100	94.5	28	2.70366	90	. . . .	3.28	. . . .	. . . .	. . . .	. . . .
100–105	18	4	. . . . . .	100	. . . .	2.28	. . . .	. . . .	. . . .	. . . .
	73,593	1,840	λp^n.							

The third column shows the Deaths in the city of Carlisle during nine years; and the second, the corresponding Population exposed to risk, as adjusted from two censuses. The third column is derived from these by the formula at the head of the column, where L and D correspond to the period n, that is, 5 or 10 years, on the same line. It expresses the common logarithm of an approximate probability of surviving the period, as noted at the foot of the column.

Let s denote the sum of the Logarithms of the three given probabilities from the age of 50 to 80. In the present example s is $\bar{1}.38086$ or -0.61914.

Also let e'_x, e_x, denote the Relative and the True Expectation at the age 80, as defined by the following equations:

$$e'_{80} = 10.844 + 10.315s, \qquad e_{80} = 7.833 + 3.833s.$$

The multipliers of C to give the correction, *Cor.* are shown in the lower part of the last column of the accompanying Table. From e' at 80, the decennial values of e' are derived one from another successively down to the age of 20, by the relative formula,

$$e'_{x-10} = 5 + p^{10}(e'_x + 5).$$

$$e_x = e'_x + \mathrm{Cor.} \qquad \mathrm{C} = e_{80} - e'_{80}.$$

Under 20 years of age, the formula for five-year intervals will be

$$e'_{x-5} = 2.5 + p^5(e'_x + 2.5).$$

The probability p^{10} or p^5 is obtained at once from the fourth column of the Table, corresponding to the given interval of age. The first equations applied to the Carlisle data give $e'_{80} = 4.46$ and $e_{80} = 5.46$; whence their difference $\mathrm{C} = 1.00$. And the corrections to be added to e' are known from the last column of the Table. From the age of 80 down to 5, the Expectations calculated by this simple process, differ but slightly from the standard results of the graphic method, as shown in the last column but three. And the next two columns headed S. M. and S. F. derived from the data and Tables of Swedish Males and Swedish Females found in Milne's treatise, show even smaller residuals.

3. Correction. A plausible but erroneous assumption is occasionally made, that when the sum of the Deaths from 60 to 65 years of age, for example, is divided by the sum of the Exposed to Risk at the same ages, the resulting ratio of mortality will be that of the middle age, 62–63. In respect to the values of l, so found in the life table, a correction will be required, which is additive up to about the age of 72, and subtractive after that age. Mr. Woolhouse finds the required correction to be the central second difference plus one-fifth of the fourth difference (of the five values of l in the period), to be applied with the sign just described. In the same communication will be found Woolhouse's Method of Final Adjustment, after a previous graduation. (*Journal*, Vol. XXI, p. 58, and Vol. XIII, p. 98.)

4. Graduation by Formula. Among various formulas presented for choice, let us here employ a modified geometric progression, with three constants to be determined from the data. For example, the observations of three five-year periods of age A, B, C are given, to be resolved into the series for single years. Let u_x denote the number for the age x; then for annual and for five-year periods:

$$u_x = a + bc^x, \qquad u_0 = a + b, \qquad u_1 = a + bc^1, \qquad u_2 = a + bc^2, \dots.$$

$$\mathrm{A} = 5a + bs, \qquad \mathrm{B} = 5a + bsc^5, \qquad \mathrm{C} = 5a + bsc^{10};$$

$$s = 1 + c + c^2 + c^3 + c^4 = \frac{c^5 - 1}{c - 1}, \qquad c^5 = \frac{C - B}{B - A},$$

$$5a = B - \frac{C - B}{c^5 - 1}, \qquad b = \frac{(B - A)(c - 1)}{(c^5 - 1)^2};$$

$$u_6 = a + bc^6, \qquad u_7 = a + bc^7, \qquad u_8 = a + bc^8.$$

Thus from A, B, C may be found u_6, u_7, u_8, the three middle terms of B. From B, C, D may be similarly found the three middle terms of C, and so on. Then u_9, u_{10} the two omitted terms between these triplets can be supplied by divided differences, as presently described. And the six other initial or final terms of the whole series, can be regularly computed by the local process above. In case the sum of any five computed terms differ from the original given sum, one-fifth of the excess can be apportioned to each term. Also instead of five-year periods, the same solution applied to ten-year periods will give five sums of two terms each, which can afterwards be separated into single terms, by applying series. And instead of interpolating Deaths D, and Living L, separately, it may be preferable to take the combinations $L - \frac{1}{2}D$, and $L + \frac{1}{2}D$, for greater regularity.

Conversely, it will sometimes be required to find x corresponding to a value of u or u_x, intermediate to u_0, u_1, u_2, noted above. In this case, logarithms can be applied to either of the results of elimination below, involving x. After solution, if the suffixes of u, instead of 0, 1, 2, are changed to n, $n + h$, $n + 2h$, for instance, then x should be changed to $n + xh$.

$$c = \frac{u_2 - u_1}{u_1 - u_0}, \qquad c^x = 1 + \frac{u_x - u_0}{u_1 - u_0}(c - 1).$$

$$\frac{u_x - u_0}{u_1 - u_0} = x + \frac{x(x-1)}{1.2}(c-1) + \frac{x(x-1)(x-2)}{1.2.3}(c-1)^2 + \ldots$$

5. *Interpolation by Divided Differences.* It has just been shown in 3. how far the divided sum or average of five terms differs from the middle term. But to substitute the divided difference of the extremes at the middle point, for the middle difference, is much more accurate, since it differs from the truth by only half the central third difference. Although often insensible, yet provision will be made for correcting even this slight residual, whenever it appears. Embarrassment is sometimes experienced in bringing together portions of the life table interpolated separately, so that the differences at the junctions shall be free from break or abrupt changes. The new artifice here suggested, is that of *substituting divided differences at the middle points.*

For one of the simpler applications, let us first suppose that two terms d, e, interpolated by different formulas are to be reconstructed so as to present a regular continuity. Let the series be

$$\ldots a \ b \ c \ (d, e) \ f \ g \ h \ .. \qquad 3y = (f - c) - \left(\frac{f - a}{5} + \frac{g - b}{5} + \frac{h - c}{5}\right).$$

$$d = c + y + \frac{f - a}{5}, \qquad e = d + y + \frac{g - b}{5}, \qquad f = e + y + \frac{h - c}{5}.$$

Thus, at first canceling the terms d, e, which include the junction, we find a slight correction y, such that the three divided differences each corrected by y, shall make up the proper quantity $f - c$. Then d, e are computed; also f, to prove the operation, by coinciding with the previous value of f, as above indicated.

For the reconstruction of four terms f, g, h, i by five differences, let the adjacent terms be

$$\ldots a\ b\ c\ d\ e\ (f\ g,\ h\ i)\ j\ k\ l\ m\ n \ldots.$$

$$5y = (j-e) - \left(\frac{j-a}{9} + \frac{k-b}{9} + \frac{l-c}{9} + \frac{m-d}{9} + \frac{n-e}{9}\right).$$

$$f = e + y + \frac{j-a}{9}, \qquad g = f + y + \frac{k-b}{9}, \qquad h = g + y + \frac{l-c}{9}, \text{ etc.}$$

The same principle might evidently be extended to the omission and re-computation of second or third differences; so that it offers facilities of unusual precision and importance.

6. *Loss Experience on different Species of Policies.* An inspection of the ratios below, may give the most correct impression. The experience of *Term* Policies is fluctuating, and appears generally dependent on particular circumstances in connection with other classes of Insurance. Besides ten Companies classified in regard to Species, the statistics of six Companies in the general collection, were classified in respect to the Amount of Policy. A difference of opinion exists in respect to the value of such minor classifications, which might be indefinitely extended to Paid-up Life, Ten Payment Life, Paid-up Endowment Policies, and others.

LOSS ON DIFFERENT SPECIES OF POLICIES.

NUMBER OF COMPANIES.	LIFE POLICIES.			ENDOWMENT INSURANCES.			TERM POLICIES.		
	PROBABLE L.	ACTUAL L.	RATIO.	PROBABLE L.	ACTUAL L.	RATIO.	PROBABLE L.	ACTUAL L.	RATIO.
	$	$	100:	$	$	100:	$	$	100:
3	3,661,757	3,799,225	104	645,702	533,013	83	169,204	165,500	98
2	7,076,232	7,068,489	99	1,119,234	859,350	77	408,101	448,530	110
2	3,611,112	3,766,759	104	302,716	264,537	87	55,419	84,067	152
3	2,997,823	3,614,288	120	399,790	391,172	98	77,285	42,900	56
10	17,346,924	18,248,761	105	2,467,442	2,048,072	83	710,009	740,997	105

LOSS RELATIVE TO THE AMOUNT OF POLICY.

SPECIES OF POLICIES.	UNDER $4,000.			$4,000 TO $10,000.			OVER $10,000.		
	PROBABLE L.	ACTUAL L.	RATIO.	PROBABLE L.	ACTUAL L.	RATIO.	PROBABLE L.	ACTUAL L.	RATIO.
	$	$	100:	$	$	100:	$	$	100:
Life Policies...	1,994,890	1,915,905	96	2,718,160	2,874,100	106	33,440	35,000	105
Endowment Ins.	258,228	222,699	86	261,060	190,000	73	1,575	20,000	..
Term Policies..	88,717	101,967	115	82,126	74,000	90	4,750	....	..
7 Companies...	3,827,440	3,672,003	96	4,393,274	4,679,100	106	119,157	85,000	71

DIVISION SECOND.

CLIMATIC TABLES.

Of thirty life insurance Companies included in the general collection, twenty-seven have returned the locality of the insured, by States or Counties. The results are given in Tables V, VI and VII.

In Table VI, the Order and Variability of Ratios is shown in detail, according to twelve Companies whose mean ratios are less than 94, six Companies whose mean ratios were between 94 and 100, and nine Companies whose mean ratios were greater than 100. The last six columns exhibit the Probable and the Actual Loss in Thousands of Dollars ; that is, 870 there signifies $870,000, and so on. For any State or group of adjacent States, the variability may be estimated by comparing the mean with the associated values horizontally.

SECTION I.

Computations of Probable Loss.

For future applications, as well as to illustrate the method of computing the columns of Probable Loss, we here insert the two accompanying *Tables of multipliers* (A), (B), to three decimals, based on the Thirty Offices Experience. A policy of $5,000 entered at the Age of 37, for example, has the Duration or Years of Insurance $10\frac{1}{2}$, and is in force or Existing at the epoch of Office investigation. The tabular probability of dying in this interval is .101, which multiplied by 5,000 gives $505, the total Probable Loss since the day of Entry. Had the same policy been *Discontinued* or *Died*, the other Table (B) would have given the multiplier .095, and the product of .095 by 5,000 or $475 would be the Probable Loss for ten years. The result differs from the former for Existing, by half a year's exposure, according to the general system of reduction described in Division I, page 24. Accordingly, the values (A) are simply the means of the adjacent values (B). Thus the first Table gives Multipliers for *the sum* of Probable Losses for $\frac{1}{2}$, $1\frac{1}{2}$, $2\frac{1}{2}$, $3\frac{1}{2}$, ... years *Existing*, and the second Table for 0, 1, 2, 3, ... years till *Death* or *Discontinuance*.

A modification to give the annual values separately, has been practiced by several Life Offices, that compute the Probable Loss at the end of every business year. For this object, Table XXVI will give the annual multiplier q for every age attained, denoted by $x+n$. A policy of $6,000 exposed for the half or third of a year, is accounted as $3,000 or $2,000 respectively exposed for the whole year; and so for other fractional parts. A joint-life policy terminates at the first death. To shorten the labor, sometimes, the tabular multipliers represent only the two nearest decimals ; and a compensation of positive and negative errors is assumed in the final sum.

THIRTY OFFICES EXPERIENCE.

(A). *Multiplier for Existing to give the whole Probable Loss.*

Dura-tion $n+\frac{1}{2}$	Age of Entry x.												Dura-tion $n+\frac{1}{2}$
	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	
$0\frac{1}{2}$	.003	.003	.003	.003	.004	.004	.005	.006	.008	.011	.016	.023	$0\frac{1}{2}$
$1\frac{1}{2}$	.010	.010	.011	.011	.012	.013	.015	.019	.024	.033	.047	.069	$1\frac{1}{2}$
$2\frac{1}{2}$	.017	.017	.017	.018	.020	.022	.026	.032	.041	.056	.079	.116	$2\frac{1}{2}$
$3\frac{1}{2}$	.023	.024	.025	.026	.027	.031	.037	.045	.059	.080	.114	.165	$3\frac{1}{2}$
$4\frac{1}{2}$	.029	.030	.032	.033	.035	.040	.047	.059	.077	.105	.149	.216	$4\frac{1}{2}$
$5\frac{1}{2}$	.036	.037	.038	.040	.044	.050	.059	.074	.096	.132	.186	.267	$5\frac{1}{2}$
$6\frac{1}{2}$	.042	.044	.045	.048	.052	.059	.070	.089	.117	.160	.225	.319	$6\frac{1}{2}$
$7\frac{1}{2}$	.049	.050	.053	.055	.061	.069	.083	.104	.138	.189	.264	.372	$7\frac{1}{2}$
$8\frac{1}{2}$	.055	.057	.059	.063	.069	.079	.096	.121	.159	.219	.305	.425	$8\frac{1}{2}$
$9\frac{1}{2}$	.062	.064	.066	.071	.079	.090	.109	.138	.183	.250	.347	.477	$9\frac{1}{2}$
$10\frac{1}{2}$	.068	.070	.074	.079	.088	.101	.122	.156	.207	.283	.389	.529	$10\frac{1}{2}$
$11\frac{1}{2}$	.074	.077	.081	.087	.097	.112	.137	.175	.232	.317	.433	.580	$11\frac{1}{2}$
$12\frac{1}{2}$	.081	.084	.088	.095	.106	.124	.152	.194	.259	.352	.477	.630	$12\frac{1}{2}$
$13\frac{1}{2}$	.087	.091	.096	.103	.116	.136	.167	.215	.286	.388	.521	.677	$13\frac{1}{2}$
$14\frac{1}{2}$	.094	.098	.103	.112	.126	.149	.184	.237	.315	.425	.565	.722	$14\frac{1}{2}$
$15\frac{1}{2}$	.100	.104	.110	.121	.137	.162	.201	.259	.345	.462	.608	.765	$15\frac{1}{2}$
$16\frac{1}{2}$	.107	.111	.118	.130	.148	.175	.218	.283	.376	.500	.650	.804	$16\frac{1}{2}$
$17\frac{1}{2}$	.113	.118	.126	.139	.159	.189	.237	.308	.408	.539	.692	.838	$17\frac{1}{2}$
$18\frac{1}{2}$	.119	.126	.134	.148	.170	.205	.256	.333	.440	.578	.731	.870	$18\frac{1}{2}$
$19\frac{1}{2}$	.127	.133	.143	.158	.182	.220	.277	.360	.474	.616	.769	.898	$19\frac{1}{2}$
$20\frac{1}{2}$	.133	.140	.151	.168	.195	.236	.298	.388	.509	.654	.804	.921	$20\frac{1}{2}$
$21\frac{1}{2}$	.139	.148	.159	.178	.208	.253	.321	.417	.544	.692	.837	.941	$21\frac{1}{2}$
$22\frac{1}{2}$	.147	.155	.169	.189	.221	.271	.344	.446	.579	.728	.866	.957	$22\frac{1}{2}$
$23\frac{1}{2}$	.154	.163	.178	.200	.236	.289	.369	.477	.614	.763	.892	.970	$23\frac{1}{2}$
$24\frac{1}{2}$	.161	.171	.187	.212	.251	.309	.394	.509	.650	.796	.915	.981	$24\frac{1}{2}$
$25\frac{1}{2}$	.168	.179	.196	.224	.266	.330	.420	.541	.685	.827	.934	.988	$25\frac{1}{2}$
$26\frac{1}{2}$	.175	.187	.207	.237	.283	.351	.447	.574	.719	.856	.951	.993	$26\frac{1}{2}$
$27\frac{1}{2}$	.183	.196	.217	.250	.300	.374	.476	.607	.752	.882	.964	.996	$27\frac{1}{2}$
$28\frac{1}{2}$	.190	.205	.228	.264	.318	.397	.505	.640	.784	.905	.975	.998	$28\frac{1}{2}$
$29\frac{1}{2}$	.198	.214	.239	.278	.337	.421	.535	.673	.814	.925	.984	.999	$29\frac{1}{2}$
$30\frac{1}{2}$	.205	.223	.251	.293	.356	.446	.565	.705	.842	.942	.989	.999	$30\frac{1}{2}$
$31\frac{1}{2}$	.213	.233	.263	.309	.377	.472	.596	.737	.868	.957	.994	.999	$31\frac{1}{2}$
$32\frac{1}{2}$	.222	.243	.276	.326	.398	.499	.627	.768	.892	.969	.997	....	$32\frac{1}{2}$
$33\frac{1}{2}$	.231	.254	.289	.343	.421	.527	.659	.798	.913	.978	.999	....	$33\frac{1}{2}$
$34\frac{1}{2}$	.240	.265	.303	.361	.444	.555	.690	.826	.932	.986	.999	....	$34\frac{1}{2}$
$35\frac{1}{2}$	.249	.276	.318	.379	.468	.585	.721	.853	.947	.991	.999	....	$35\frac{1}{2}$
$36\frac{1}{2}$	.258	.287	.333	.399	.493	.614	.751	.877	.960	.995	.999	....	$36\frac{1}{2}$
$37\frac{1}{2}$	.267	.300	.349	.420	.519	.644	.781	.898	.971	.997	....	....	$37\frac{1}{2}$
$38\frac{1}{2}$	.278	.313	.366	.441	.546	.674	.809	.919	.980	.999	....	....	$38\frac{1}{2}$
$39\frac{1}{2}$	.288	.326	.383	.463	.573	.704	.835	.936	.987	.999	....	....	$39\frac{1}{2}$
$40\frac{1}{2}$	.298	.340	.401	.487	.601	.733	.860	.951	.992	.999	....	....	$40\frac{1}{2}$
$41\frac{1}{2}$	.310	.355	.420	.512	.630	.762	.883	.963	.995	.999	...	....	$41\frac{1}{2}$
$42\frac{1}{2}$	.322	.370	.440	.537	.658	.790	.904	.973	.997	....	....	....	$42\frac{1}{2}$
$43\frac{1}{2}$	.335	.386	.461	.562	.687	.817	.923	.982	.999	....	....	....	$43\frac{1}{2}$
$44\frac{1}{2}$	.349	.403	.483	.588	.716	.842	.940	.988	....	....	....	....	$44\frac{1}{2}$
	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	

$$\text{Formula, Multiplier} = 1 - \frac{l_{x+n+\frac{1}{2}}}{l_x}.$$

THIRTY OFFICES' EXPERIENCE.

(B). *Multiplier for Discontinued and Died to give the whole Probable Loss.*

DURA-TION n.	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	DURA-TION n.
					AGE OF ENTRY *x.*								
0	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	0
1	.006	.007	.007	.007	.008	.008	.010	.012	.016	.022	.031	.045	1
2	.013	.013	.014	.014	.016	.017	.020	.025	.032	.044	.063	.092	2
3	.020	.020	.021	.022	.023	.026	.031	.038	.050	.068	.096	.140	3
4	.026	.027	.028	.029	.031	.035	.042	.052	.068	.092	.131	.190	4
5	.032	.033	.035	.036	.039	.045	.053	.066	.086	.118	.167	.241	5
6	.039	.040	.041	.044	.048	.054	.064	.081	.106	.146	.205	.293	6
7	.045	.047	.049	.051	.056	.064	.076	.096	.127	.174	.244	.345	7
8	.052	.053	.056	.059	.065	.074	.089	.112	.148	.203	.284	.398	8
9	.058	.060	.062	.067	.074	.084	.102	.129	.171	.234	.326	.451	9
10	.065	.067	.070	.074	.083	.095	.115	.147	.194	.266	.368	.503	10
11	.071	.073	.077	.083	.092	.106	.129	.165	.219	.299	.411	.555	11
12	.077	.080	.084	.091	.101	.118	.144	.184	.245	.334	.455	.605	12
13	.084	.087	.092	.099	.111	.130	.159	.204	.272	.369	.499	.654	13
14	.090	.094	.099	.107	.121	.142	.175	.225	.300	.406	.543	.700	14
15	.097	.101	.106	.116	.131	.155	.192	.248	.329	.443	.586	.744	15
16	.103	.107	.114	.125	.142	.168	.209	.271	.360	.481	.629	.785	16
17	.110	.114	.122	.134	.153	.182	.227	.295	.391	.519	.671	.822	17
18	.116	.122	.130	.143	.164	.197	.246	.320	.424	.558	.712	.855	18
19	.123	.129	.138	.153	.176	.212	.266	.346	.457	.597	.751	.885	19
20	.130	.136	.147	.163	.188	.228	.287	.374	.491	.635	.787	.910	20
21	.136	.144	.155	.173	.201	.244	.309	.402	.526	.673	.821	.932	21
22	.143	.151	.164	.183	.214	.262	.332	.431	.561	.710	.852	.949	22
23	.150	.159	.173	.194	.228	.280	.356	.461	.596	.746	.879	.964	23
24	.157	.167	.182	.206	.243	.299	.381	.493	.632	.780	.904	.976	24
25	.164	.175	.191	.218	.258	.319	.407	.524	.667	.812	.925	.985	25
26	.171	.183	.201	.230	.274	.340	.433	.557	.702	.842	.943	.991	26
27	.179	.191	.212	.243	.291	.362	.461	.590	.735	.869	.958	.995	27
28	.186	.200	.222	.256	.308	.385	.490	.623	.768	.894	.970	.997	28
29	.194	.209	.233	.271	.327	.408	.519	.656	.799	.915	.980	.999	29
30	.201	.218	.245	.285	.346	.433	.550	.689	.828	.934	.987	.999	30
31	.209	.228	.257	.301	.366	.459	.580	.721	.856	.950	.992	.999	31
32	.217	.238	.269	.317	.387	.485	.611	.753	.880	.963	.995	.999	32
33	.226	.248	.282	.334	.409	.513	.643	.783	.903	.974	.998	....	33
34	.235	.259	.296	.351	.432	.541	.674	.812	.923	.982	.999	....	34
35	.244	.270	.310	.370	.456	.570	.705	.840	.940	.989	.999	....	35
36	.253	.281	.325	.389	.480	.599	.736	.865	.954	.993	.999	....	36
37	.262	.293	.340	.409	.506	.629	.766	.888	.966	.996	.999	....	37
38	.272	.306	.357	.430	.532	.659	.795	.909	.976	.998	....	....	38
39	.283	.319	.374	.452	.559	.689	.822	.928	.984	.999	....	....	39
40	.293	.333	.392	.475	.587	.718	.848	.944	.990	.999	....	....	40
41	.304	.347	.410	.499	.615	.748	.872	.957	.994	.999	...	....	41
42	.316	.362	.430	.524	.644	.776	.894	.968	.996	.999	....	....	42
43	.328	.378	.450	.549	.672	.804	.914	.978	.998	....	....	....	43
44	.341	.395	.471	.575	.701	.830	.932	.985	.999	....	....	....	44
	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	

FORMULA, $\text{Multiplier} = 1 - \dfrac{l_{x+n}}{l_x}$.

The climatic Tables being already in use, are retained in the original form, based on multipliers from the common American Table of 1858. Parallel computations of the total, lead to the following precepts: To change the *Probable Loss* Am. 1858, in Tables V, VI, or VII, to the standard of—

The Thirty American Offices Table ; Deduct $\frac{1}{30}$th part.
    "   Twenty British   "   "   H^M.; Add $5\frac{1}{5}$ per cent.
    "   Seventeen British   "   "   Add $8\frac{3}{8}$ per cent.

The corresponding factors are 0.9667, 1.0519, 1.0837, and their logarithms 1.98530, 0.02198, 0.03492. The columns of *Actual Loss* of course remain unchanged. By these precepts, a present Probable Loss of $1,204,521 to be represented on the basis of the Thirty Offices Table, is changed to $1,164,370. And the tabular ratio of 100 : 134 becomes 96$\frac{2}{3}$: 134, or 100 : 139 nearly.

SECTION II.

Classification of Counties.   Miscellaneous Statistics.

Preparatory to the classification of Counties in respect to Mortality, the simple division shown on the common Geological maps of the United States may be noted. First, the lowland or *Alluvial* Counties commencing with the eastern shores of Maryland and Virginia, and following the line of tide-water on the Atlantic and Gulf coasts to the borders of Mexico, and up the valley of the Mississippi to the mouth of the Ohio river. These alluvial Counties are denoted in Table VII by one dot annexed. Between these and the line of 400 feet elevation, are the *Middle* Counties, of which the tertiary portion are here denoted by three dots, and the few cretaceous by two dots. The remaining or Upland Counties above the line of 400 feet elevation, according to Prof. Guyot, are here indicated by the absence of dots. The Counties of Indiana admit of separate consideration. Also the present object may be found to require a modification of these divisions.

CLASSIFICATION OF COUNTIES

STATES.	ALLUVIAL COUNT'S.		MIDDLE COUNTIES.		UPLAND COUNTIES.		TOTAL COUNTIES.	
	PROB. LOSS.	ACT. LOSS.	PROB. LOSS.	ACT. LOSS.	PROB. LOSS.	ACT. LOSS.	PROB. LOSS.	ACT. LOSS.
Alabama ..	396,236	544,453	175,977	194,580	523,007	729,014	1,204,521	1,618,048
Arkansas..	98,449	221,995	125,202	196,084	46,238	80,040	295,413	508,119
Florida....	133,347	224,596	28,758	32,550	....	....	181,635	303,852
Georgia....	2,117	7,500	524,221	603,540	355,738	257,860	950,653	911,536
Louisiana..	1,252,180	2,194,255	23,901	30,660	....	....	1,363,520	2,400,915
Mississippi	301,087	552,260	416,626	585,344	13,491	15,660	795,476	1,308,632
N. Carolina	225,053	353,555	390,924	442,633	178,804	201,721	843,815	1,069,409
S. Carolina.	374,487	446,438	192,387	182,193	179,009	227,004	753,060	864,635
Tennesee.	708,436	1,488,636	181,460	209,380	467,280	544,055	1,383,648	2,262,121
Texas.....	214,043	511,467	332,901	572,267	184,655	264,238	778,713	1,358,972
Virginia...	3,567	13,009	385,727	349,100	141,204	202,750	646,188	673,350
Total......	3,709,002	6,558,155	2,778,004	3,398,331	2,089,426	2,522,342	9,196,642	13,279,589
Ratio (Am. 1858),	100 : 177		100 : 122		100 : 121		100 : 144	
By 30 Offices Table,	100 : 183		100 : 127		100 : 125		100 : 149	
By 20 Offices Table, H^M.	100 : 168		100 : 116		100 : 115		100 : 137	
By 17 Offices Table,	100 : 163		100 : 113		100 : 111		100 : 133	

A singular feature is presented in the close agreement of the climatic Ratios for Middle and Upland Counties, indicating that these may be united; or that hereafter, two classes, *Alluvial* and *Upland*, will generally be sufficient. A wide contrast is shown between their characteristic Ratios, 100 : 183 and 100 : 126, by the Thirty Offices Table. It will also be noted that the Upland Counties of Georgia at the southern termination of the Alleghany mountains are exceptionally healthy in the ratio of 100 : 72.

In the State of Indiana, the experience of eleven smaller Companies gave a Probable Loss of $563,770 and an Actual Loss of $743,866; Ratio 100 : 132. By the accession of other Companies, the total ratio was materially altered, as shown at the end of Table VII. The less healthy Counties are reported to lie in the north-eastern part of the State, and along the Wabash and Ohio rivers.

The following additional data pertaining to the Southern States, are arranged from the statements of particular Companies, more especially to show in the last column *the Age corresponding to the mean Rate* of Probable Loss divided by the number Exposed to Risk. The results of the 27 Companies in Table V, and the 3 other Companies, for the whole United States, are subjoined.

AGE OF MEAN RATE OF PROBABLE LOSS.

COMPANIES.	DEATHS OR LOSS.	EXPOSED TO RISK.	PROBABLE DEATHS OR LOSS.	RATE OF PROB- ABLE.	AGE OF RATE.	TABLE EMPLOYED.	PROB. : ACT. AS 100 :
Ætna Life (III)	1,366.3	74,270	966.90	1.3019	Y 46.27	17 Offices	141
St. Louis Mutual...... .. .	677	37,940	442.96	1.1675	46.26	Am. 1858	153
Covenant "	243.3	17,594	203.95	1.1592	46.07	" "	119
Continental, N. Y..........	459.8	20,937	249.31	1.1910	44.56	20 Offices	184
Scottish Amicable	139	5,966	79.94	1.3400	46.60	" "	174
27 Companies, U. S........	192,049.0	9,327,400	104,531.5	1.1209	45.11	Am. 1858	98
3 " "	35,961	2,909,037	37,580.7	1.2919	48.69	" "	85

It may here be noted that the Experience of the Ætna, Covenant and Continental, also of the 27 Companies and 3 Companies, is stated in thousands of dollars. Three-fourths of the business of the Covenant of St. Louis was located in the State of Missouri. The Experience of the Scottish Amicable here represents only the portion located in the British colonies of the West Indies; where the climatic ratio by the 20 Offices Table, 100 : 174 so far exceeds the like ratio 100 : 168 before found for Alluvial counties in the Southern States. With the omission of the Continental, N. Y., whose business appears somewhat exceptional, the Age of the mean Rate of Probable Loss relative to exposure, differs little from 46.3 years, in the Southern or tropical experience of the other four Companies.

With regard to the comparative *Mortality of insured Females*, the Southern experience of the St. Louis Mutual, comprising 628 deaths of Males, and 48 of Females, gave the ratio of Probable to Actual Loss (Am. 1858) for Males 1.51, and for Females 1.70; thus indicating greater mortality on the part of Females.

In relation to the *Mortality by Policy years*, the total experience of the St. Louis

Mutual, comprising 1486 deaths, North and South, gave the following ratios of Probable Loss, denoted by 1, to Actual Loss (Am. 1858):

ST. LOUIS MUTUAL.

Policy Years....	1st.	2d.	3d.	4th.	5th.	6th.	7th.	8th.	9th.	10th.	Total.
Deaths..........	360	330	232	180	146	87	73	40	20	7..	1486
Ratios..........	1.13	1.35	1.55	1.26	1.68	1.21	1.52	1.81	1.34	1.36..	1.33

SCOTTISH AMICABLE IN THE WEST INDIES.

Deaths..........	9	10	13	12	14	6	After 6th year, 75	139
Ratios..........	1.59	0.97	1.47	1.59	2.12	1.03	(Am. 1858), 1.91	1.65

The mean rate 1.33 of the former Company is reached in the second year; that of the latter, nearly in the first year, but the ratios are irregular from paucity of data. For information upon other portions of the globe, reference may be made especially to the following articles in the *Journal of the Institute of Actuaries:*

On the rates of extra premium for foreign travelling and residence. By ARTHUR H. BAILY, ESQ. *Actuary of the London Assurance Corporation.* Vol. 15, pp. 77–94, 1869.

On the Additional Premium required for Residence in Foreign Climates. By the Honorary President, JAMES MEIKLE, *Fellow, etc.* Vol. 19, p. 268, 1876.

On the Death Rate among Assured Lives in the West Indies, being the Experience of the Scottish Amicable Life Assurance Society during Thirty Years, 1846–76. By JOHN STOTT, late *Manager of the Society, Fellow, etc.* Vol. 21, p. 153, 1878.

In proceeding from the temperate to the torrid zone, it is generally admitted that, "other things being equal,—height, soil, and river drainage,—the mortality will increase as we go South; and that heat stimulates the vital functions, so that maturity is reached earlier, and decay commences earlier."

Climate Extra. The net extra to meet the additional risk, is roughly found by dividing the excess of the Actual above the Probable Loss, by the Exposure. Thus among the examples given by the distinguished actuary and manager T. B. Sprague, in the *Journal of the Institute*, Vol. 19, page 297, the years of Life exposed in India were 229, Actual Deaths 11, Probable Deaths, II^{M}, 3.499. And $(11-3.499) \div 229 = .03276$; or the Climate Extra is 3.276 per cent. of the sum insured. By a more extensive method, Mr. A. H. Baily now President of the Institute, in his memoir above quoted, first constructed a life table from the foreign experience, and thence a scale of annual premiums; the difference between this and the home scale, gave the climate extras for the several ages of exposure. Besides the ordinary extra, which averaged one per cent. in the West Indies, the difference between unacclimated and acclimated lives led the Scottish Amicable to charge an additional extra of one per cent. of the sum insured, during the first three years of foreign residence. On returning to reside in Great Britain, with ordinary health, all extras are omitted.

SECTION III.

The Life Table graded for different Climates.

Let us now consider the application of Table VI to permanent life insurances for different grades of mortality. In a State, for example, where the ratio of Probable to Actual Loss by Table VI corrected to the Thirty Offices Table, has been 100 : 139 in the mean Experience of 27 Companies; and the ratios were 100 : 112, 100 : 153, and 100 : 161 in the three component groups of Companies, the most experienced actuaries and managers could best determine the single resultant or *probable climatic ratio* for Office premiums. Such examination would be influenced by the probable extent of new business, the medical and counter selections, prevailing causes of death,—and south of the latitude of 36° 30′, also extending north of it, the alluvial Counties distinguished in Table VII. For convenience, the net ratio thus conventionally adopted may be denoted by 100 : 100ρ, that is 1 : ρ.

The Thirty Offices collection defines the experience of insured mortality along a wide belt of the temperate zone, the middle line centering nearly on the latitude of the city of New York. The resulting standard, Table XXVI has the advantage of unusually large data, critical accuracy and improved construction. To construct other life Tables, from the small numbers of more distant climates, North or South, would involve great labor and complexity. The difficulties are marvellously reduced by the discovery of a double gradation. That is, Table XXVI being graduated in the direction of the scale of ages, is virtually graded in another direction also, by its commutation columns, which represent life tables for so many different climates, or climatic ratios. And the values for intermediate ratios, can be found by simple interpolation.

This improvement was first suggested by the entire agreement of Table XXVI with the well-known law of Gompertz, modified by Makeham, observing that in previous comparisons of the annual rate or (log p), change of the first term (log s) of Makeham's formula, corresponded with changes of mortality due to local or climatic causes; the other term or power of (q) being nearly constant for a long series of years or ages.

Again, from a different source, but on the same principle, the experience of the Scottish Amicable in the West Indies, was stated by the late manager and actuary to be represented by the Northampton table better than any other of the current life tables. Yet our examination indicates, that by a simple change of the rate of interest, the Carlisle Table might be substituted, as shown by the following comparison of life annuities; and the same might be extended to life premiums, with a simple modification presently described.

LIFE ANNUITIES.

Age, Years....................	25	35	45	55	65	75
Northampton 4 per cent..........	15.44	14.04	12.28	10.20	7.76	4.96
Carlisle 5 per cent..............	15.30	14.13	12.65	10.35	7.77	4.99
Northampton 5 per cent..........	13.57	12.50	11.11	9.38	7.28	4.74
Carlisle 6 per cent..............	13.46	12.57	11.43	9.52	7.28	4.76

In the first publication of the climatic Tables, it was provisionally assumed that, above the age of twenty or some lower limit, the different grades of mortality (q) are proportional to those of the standard Table. The preceding comparison of annuities as well as other reasons, afterwards suggested to the writer the more convenient and exact hypothesis, to which Mr. McClintock appears to have arrived in a different way, that *the probabilities of survival* (p) *for different grades of mortality, are proportional to those of the standard Life Table.* In another expression, the rates of survival and of interest may be commuted. That is, so far as relates to life annuities, an increase of the rate of mortality, may be represented by an increase in the rate of interest; and conversely.

For illustration, let us distinguish the Northampton values by an accent, and write the well-known formulas below ; then since annuities are assumed to be equal:

Northampton 4 per cent.	*Carlisle 5 per cent.*	*Relation.*

$$a'_x = v'p'_x(1+a'_{x+1}).\qquad\qquad a_x = vp_x(1+a_{x+1}).\qquad\qquad v'p'_x = vp_x.$$

Consequently -   -   -   -   -   -   -   - $$\dfrac{D'_{x+n}}{D'_x} = \dfrac{D_{x+n}}{D_x}.$$

$$1+a'_x = \dfrac{N'_x}{D'_x} = \dfrac{N_x}{D_x} = 1+a_x.\qquad\qquad \dfrac{N'_y}{D'_x} = \dfrac{N_y}{D_x} = \dfrac{N_y}{D_y}\times\dfrac{D_y}{D_x}.$$

$$\pi'_x = 1000\left\{\dfrac{1}{1+a'_x} - (1-v')\right\},\qquad\qquad \pi_x = 1000\left\{\dfrac{1}{1+a_x} - (1-v)\right\}.$$

$$\text{Ordinary Life,}\quad \pi'_x = \pi_x + 1000(v'-v).$$

$$\text{Reserve} = 1 - \dfrac{1+a'_{x+n}}{1+a'_x} = 1 - \dfrac{1+a_{x+n}}{1+a_x}.$$

$$\text{Temporary Annuity,}\quad a'^n_x = a^n_x = \dfrac{N_{x+1}-N_{x+n+1}}{D_x}.$$

$$\text{Premium of Term Insurance,}\quad P' = v' - \dfrac{N'_{x+1}-N'_{x+n+1}}{N'_x-N'_{x+n}},\qquad P' = P + 1000(v'-v).$$

Hence it appears that with very simple modifications, the Northampton values at 4 per cent. can all be derived virtually from the 5 per cent. Carlisle values.

In like manner, the values corresponding to different grades of climatic mortality, can be conveniently derived from the columns of the Thirty Offices Table. The age of the mean ratio of mortality has been determined on page 47 to be about 46 years. For the present purpose, this determination will supply the place of another element, the mean ratio of probable loss to the number exposed to risk, in the climatic district.

In a given locality, let the probable loss as computed by the Thirty Offices Table, be to the actual loss as $1 : \rho$. That is, let ρ denote the climatic ratio ; and let an accent distinguish the values of v, q, p for the locality. Then by the Relation preceding, and by page 47,

$$v'p'_{46} = vp_{46},\qquad \text{or } v'(1-q'_{46}) = vp_{46}.\qquad q'_{46} = \rho q_{46}.$$

$$\text{Eliminating } q'_{46},\qquad \rho = \dfrac{v'-vp_{46}}{v'q_{46}}.$$

Let the value of v' depend constantly on 4 per cent. interest; that of p_{46}, q_{46} on the Thirty Offices Table. Then if v depends on 4, $4\frac{1}{2}$ or 5 per cent. interest, the values of ρ thus found will be 1, 1.405, 1.805 respectively; which may be termed *Special Climatic Ratios.*

For the *First Special Ratio* 1.405, we have $p'_x = \dfrac{1.040}{1.045} p_x$. From this, we might construct a special life table, and 4 per cent. commutation columns, which would give the net life premium on 1000, at the age of 30 years for example, 19.50. But the same can be found much more easily by the preceding formula, $\pi'_x = (\pi_x,\ 4\frac{1}{2}\ \text{per cent.}) + 1000(v'-v)$; where $\dfrac{1}{1.04} - \dfrac{1}{1.045} = 0.00460066$, to be multiplied by 1000. And so for other similar formulas.

For the *Second Special Ratio* 1.805, we have $p'_x = \dfrac{1.04}{1.05} p_x$.

Also $\pi'_x = (\pi_x,\ 5\ \text{per cent.}) + 1000(v'-v)$; where $\dfrac{1}{1.04} - \dfrac{1}{1.05} = 0.00915751$ to be multiplied by 1000.

Therefore for the D, N, S columns according to 4 per cent. interest and the Climatic Ratio 1.405, we have in Table VIII substituted the $4\frac{1}{2}$ per cent. columns of the Thirty Offices standard. And for the D, N, S columns corresponding to 4 per cent. and the Climatic Ratio 1.805, Table VIII gives the equivalent 5 per cent. columns of the standard. But it is needful to observe, that this substitution could not be extended to the C, M, R columns, without modification. Nor is it necessary, since all the formulas can be expressed in terms of D, N, S, v' and v.

In conclusion, the Climatic Ratios given in Tables V, VI and VII, being first changed to the basis of the Thirty Offices Table, the corresponding 4 per cent. premiums and annuities may be found from those of the Special Ratios in Table VIII by proportion or interpolation. And the preceding formulas may be extended to other species of Premiums and Reserves. The relation $v'p' = vp$ first occurs in the treatise on Policy Life Lines, by James Meikle, Edinburgh, 1870.

DIVISION THIRD.

MEDICAL STATISTICS.

STATISTICS of Diseases or Causes of Death have been returned by twenty-seven of the thirty Companies included in the general collection. These twenty-seven are the same which gave the Climatic Statistics, with one exception. The total number of Deaths from All Causes was 37,624; of which 35,442 were Deaths of Males, and 2,182 of Females; also there were 8,919 Deaths additional in the three Companies not specifying diseases. Under experienced medical advice and direction, the results are given in the most approved forms for reference in Tables IX–XVII. The classification of diseases accords nearly with the last plan of Dr. Farr, as recently applied in the Medical Report of the Mutual Life of New York.

An examination of medical treatises, including special works on Medical Examination for Life Insurance, like Brinton or Allen, will suggest many inquiries, to which the present Tables will often give an instructive answer. What diseases increase, and what diminish as age advances? What diseases or causes of death are beyond the cognizance, and what are most easily recognized by medical examination, and at what ages? What is the distribution of diseases in different parts of the United States? On these and kindred topics, the statistics give valuable information, and will suggest, in lieu of extended commentary, a ready reference to the Tables themselves.

In examining these records, we are reminded of the more numerous unrecorded cases, in which, the innate vital force has reverted from morbid or diseased conditions into the old channels of health. The struggle to rise from a diseased condition, may be short and decisive, terminating in death or in convalescence, or it may be longer prolonged with varying fortunes. The contending forces often appear so equally balanced, that a very little will turn the scale. The struggle between the tendency to health and the tendency to disease, acute or chronic, may last from a day to months, and even years. Thus medical statistics illustrate the nature of the mysterious vital force, by its final developments under varied conditions of age, duration, sex and climate.

SECTION I.

Description of the Tables.

The first of the series, Table IX, is a general Table giving firstly the Number of Deaths of insured males, and similarly of females, by 160 Diseases, in seven classes, commencing with zymotic. The next three columns give the results for two, for five, and for twenty Companies arranged to include about one-third of the whole, or nearly 12,541 in each group. By glancing across the three columns horizontally, the *Variability* by each disease is ordinarily indicated. For example, the deaths by Typhoid Fever, at the head of the list, appear to have been quite uniformly distributed.

In the last column, the 37,624 deaths are represented on the percentage scale of 100.00 distributed proportionally to the number of deaths by each disease. The principal or leading diseases in order, are Typhoid Fever 5.99 per cent., other Fevers 4.35, Consumption 18.31, Apoplexy 4.70, Paralysis and Disease of Brain 4.34, Heart Disease 3.61, Pneumonia or Inflammation of the Lungs 7.68, Accidents and Injuries 7.21 per cent. of all. These and other results may be deemed as correct as can possibly be obtained under existing circumstances. Some allowance is to be made for the inexactness of medical science, with gradual changes and transposition of medical terms. Also when one disease is accounted as the producing cause of another, the last or fatal disease is the one noted in these statistics, from Office registers.

Table X, XI, XII contain only the absolute numbers of Deaths, which constitute one of the two terms of ratio or comparison in the Tables following, with separate columns for males (A), and Females (B).

Tables XIII and XV are a further development of Table X with respect to *Duration of Insurance.* After the seven general classes, the statistics are subjoined for thirty-nine leading Diseases. The corresponding Exposure of the living is given at the foot of the columns in Table XIII. For example, in the first column, 2,445 Deaths divided by 356,210 years Exposed gives 0.00686, that is, 0.686 Deaths per cent. or 68.6 in 10,000 Exposed to Risk, as shown at the head of the column. It will be noticed that during the first two or three years of Male Life, the deaths from Zymotic diseases, and from Accidents and Injuries, have generally exceeded the average, thus showing this part of the mortality to be uncontrolled by the Medical examination. And the same may be remarked in Female Life, including Childbirth and Puerperal Diseases. On the other hand the efficient diagnoses of Constitutional and Heart diseases, and, in general, of "All Causes," is very evident from the inspection.

Tables XIV and XVI give, according to the *Ages of Life or Exposure,* in extension from Table XI, the ratio of deaths to the Living, and the ratio to total Deaths. The Exposed to Risk by Ages are inserted at the foot of Table XIV; and the number of diseases is further reduced in Tables XV (B) and XVI (B) for female life. All these results by Ages of Life, will be found not less valuable than those from the different point of view of the Durations of insurance.

Finally, Tables XII, and XVII (A), (B), (C), indicate the *Climatic Distribution of Diseases* in the United States. These figures relate to Actual Deaths, while the Climatic Tables V, VI, and VII are based on Amounts Insured; the one class may supplement the other. In comparing the deaths of 703 Foreign Males, Table XVII (A), with an equal number of the native-born insured, the greater exemption of foreigners from Zymotic and Constitutional Diseases is counterbalanced by an excess of deaths from Apoplexy (chiefly of Germans in one Company), from Abscess, Hemorrhage etc. of Lungs, and Accidents and Injuries. About two-thirds of this experience, however, occurred in British America, and the remaining numbers are too small for final conclusions.

Again, comparing insured Male Deaths with those of the U. S. Census of 1870, shown in Table XVII, for equal totals, the *proportions* dying from three of the seven classes, that is, from Circulatory, Respiratory and Miscellaneous Diseases, are nearly equal. And the decreased mortality of insured lives from Constitutional Diseases is counterbalanced by a marked excess of deaths from Nervous and Digestive Diseases, and a small excess from Zymotic Diseases. In respect to Female life the differences of distribution evidently follow a different order.

Representing the total deaths by 100, in each of the seven groups of States, we have in Table XVII (B) the relative proportions of insured males dying from thirty-

seven principal diseases. It is the comparison of a part with the whole, that is, deaths with total deaths, since the living or Exposed to Risk are here omitted.

But the last Table, XVII (C) gives a sanitary survey of the United States, according to the deaths and diseases among 10,000 living insured in each group of States. To arrive at the living, the following process was employed. First, as verified in the mean of two of the largest Life Companies, the ratio of Probable to Actual Claims in Table V was assumed to be the same as the like ratio for Deaths; and the Age of mean Probable Deaths, to be 46 years, as already indicated, page 47. That is, in any group of States,

$$\frac{Probable\ Deaths}{Actual\ Deaths} = \frac{Probable\ Claims}{Actual\ Claims}; \quad \frac{Probable\ Deaths}{Exposed} = q_{46}; \text{ or}$$

$$\frac{Actual\ Deaths}{Exposed} = q_{46} \times \frac{Actual\ Claims}{Probable\ Claims} = \frac{Tubular\ Deaths}{10,000\ Living}.$$

Here the second equation is divided by the first, to give the third. By changing the middle member to a decimal, then multiplying both numerator and 1 the denominator by 10,000 we obtain the last member, as shown at the head of Table (C). The value of q or 0.011562 corresponds to the Actual and Probable Claims found in Table V. The rest of the values in Table C were then readily found by multiplying the head of the column into the proportional parts of Table XVII (B). By this technical process, an additional and very important Table is obtained.

SECTION II.

Statistics of Consumption Compared. Sanitary Survey of the United States.

To illustrate the relation of the statistics to any specified disease, let us take for a first example, Consumption, the most fatal of all. Firstly in Table IX, the deaths 2,283, 2,231, and 2,372 in three groups, prove the deaths from Consumption to have occurred at a nearly uniform rate of frequency in all the Life Insurance Companies. Again, the 18.31 per cent. of total deaths shown in the last column, when increased, as it probably should be, by one-thirteenth of the deaths by Pneumonia (chronic cases), and by deaths registered from Abscess of Lungs, Hemorrhage of Lungs and Disease of Lungs, becomes 20.67 per cent., or more than one-fifth of the whole mortality.

Table XIII confirmed by XV, shows the effect of medical selection exhausted and the average mortality of consumptive cases reached in the third year of Duration of the Insurance. Table XIV confirmed by XVI, shows the largest mortality by consumption to occur between the Ages of 20 and 30 years. But after this period, the proportion of consumptive deaths of Males, bears a two-fold aspect. That is, when compared with the number of living exposed (Table XIV), it slowly decreases to a minimum rate between 50 and 60 years, and then gradually rises again, with a heavy mortality all the while, in every period of age.

FROM TABLE XIV (A).

Ratio of Consumptive Deaths, to 10,000 Living at each Age.

Age.........	Under 20	20–30	30–40	40–50	50–60	60–70	70–80	All Ages.
Ratio........	12.0	22.7	19.6	17.4	15.8	17.6	19.1	18.6

But when compared with the total contemporary deaths (Table XVI), the proportion from consumption continually decreases, as the complementary proportion from other causes, increases above the age of thirty years. For Female Life, with more extensive data, the general statement would doubtless, be similar to that before given for males.

FROM TABLE XVI (A).

Ratio of Consumptive Deaths, to 100 total Deaths at each Age.

Age.........	...	20–30	30–40	40–50	50–60	60–70	70–80	All Ages.
Ratio........	...	30.3	25.8	17.8	10.8	6.5	3.5	18.3

Passing now to the Climatic Distribution in Table XVII (A) we observe that North of latitude 36° 30′, the deaths from consumption are 18.7 per cent. of the total Deaths for male life, and 19.3 for females. While south of 36° 30′, the percentages are 12.3 and 9.0 respectively. The apparent deficiency from consumption in the latter, proceeds only from comparison with a larger total, including an excess from malarial or other diseases.

Compared with the United States Census of 1870, the percentage of consumptive deaths 18.3 in a total of 100 deaths of insured, is less than the result of the Census, which is represented by 26.2 for males, and by 29.7 for females. Thus the rejection of lives uninsurable from incipient consumption is manifest.

Table XVII (B) exhibits in more full detail, the percentage of insured males dying from consumption regarded as a part of a total of 100 deaths in each group of States. In the composition of 100 deaths, the consumptive element will be seen to decrease in the following order of groups, iii, i, iv, ii, v, vii, vi: as the numbers 21, 20, 18, 17, 16, 15, 12. Thus in proceeding towards the tropical regions, the ratio of deaths by consumption to those from other diseases, gradually diminishes. But further statistics in the next Table (C) will prove such change of ratio to proceed, not from absolute decrease of consumptive deaths, but entirely from increased mortality by other causes.

The practical question, what part of the United States is most favorable to consumptive invalids, can now be satisfactorily answered, so far as average yearly results are concerned, from Table XVII (C).

Ratio of Consumptive Deaths, to 10,000 Living.

Group of States.........	III	V	VI	I	IV	II	VII
Ratio.................	22.2	21.5	21.0	20.8	18.5	16.9	16.9

Group III comprises New Jersey and Pennsylvania; V, Delaware, Maryland, Dist. of Columbia, Virginia, Kentucky and Missouri; VI, States south of lat. 36° 30′; I, New England and New York; IV, Ohio, Indiana, Illinois, Iowa and Kansas; II, Michigan, Wisconsin, Minnesota and Nebraska; VII, Washington, Oregon, California, Utah, Dacotah and New Mexico.

By an obvious generalization, the first four groups, comprising *the Atlantic and Gulf States,* from Maine to Florida and from Florida to the borders of Mexico, *have very nearly the same rate of consumptive deaths, or 21 annual deaths to 10,000 living.* The Western States show a decrease of the consumptive rate to 18½ in group IV; while the groups II, and VII, or the Northwestern and Pacific States agree in the

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The bold figures refer to the seven groups of *States* in the margin. The respective annexed figures are arranged in ascending order, to show the Proportional Deaths by each disease, among 10,000 Insured Males, living in each group of States.

From Table XVII (C).

	Diseases	Least Mortality								Greatest Mortality						Mean
	All Causes.	**2**	97.7	**4**	104.5	**1**	105.3	**3**	107.1	**7**	112.2	**5**	130.5	**6**	170.5	118.3
SUMMARY.	Zymotic Diseases	**7** 15.9		**3** 16.6		**1** 17.6		**2** 18.5		**4** 18.7		**5** 27.5		**6** 48.4		23.3
	Constitutional Diseases	**2** 21.4		**7** 22.1		**4** 23.0		**6** 26.3		**1** 26.4		**5** 27.3		**3** 27.9		24.9
	Nervous Diseases	**2** 11.5		**4** 14.4		**1** 15.4		**3** 15.4		**7** 18.4		**5** 20.1		**6** 22.3		16.8
	Circulatory Diseases	**2** 4.4		**4** 4.6		**1** 6.6		**5** 6.7		**6** 6.8		**3** 7.3		**7** 9.2		6.5
	Respiratory Diseases	**3** 12.1		**1** 13.3		**2** 14.6		**7** 14.6		**4** 16.6		**5** 18.1		**6** 21.5		15.8
	Digestive Diseases	**1** 8.6		**7** 9.1		**2** 10.0		**3** 11.2		**4** 11.2		**5** 11.9		**6** 22.0		12.0
	Miscellaneous Diseases	**4** 16.0		**3** 16.6		**2** 17.3		**1** 17.4		**5** 18.9		**7** 22.9		**6** 23.2		18.9
Zymotic.	Typhoid and Typhus Fever	**6** 4.8		**7** 5.2		**4** 6.7		**3** 6.8		**5** 6.9		**1** 7.6		**2** 8.5		6.6
	Malarial Fever	**1** 1.7		**3** 1.8		**7** 1.9		**2** 2.3		**4** 3.3		**5** 3.8		**6** 11.8		3.8
	Erysipelas	**1** 1.0		**3** 1.0		**2** 1.3		**4** 1.3		**5** 1.3		**6** 1.5		**7** 2.2		1.4
	Dysentery	**3** .9		**2** 1.4		**4** 1.4		**7** 1.5		**1** 1.7		**5** 3.6		**6** 5.8		2.3
	Diarrhœa	**7** .2		**2** .7		**4** .8		**1** .9		**3** 1.0		**5** 1.6		**6** 3.6		1.3
	Cholera	**2** .8		**1** .9		**7** .9		**3** 1.1		**4** 2.0		**6** 2.4		**5** 3.5		1.7
	Alcoholism	**6** .3		**1** .3		**2** .3		**3** .3		**4** .4		**5** .5		**7** .6		.4
	Other Zymotic Diseases	**4** 2.8		**2** 3.2		**7** 3.4		**1** 3.6		**3** 3.7		**5** 6.3		**6** 18.2		5.9
Constitutional.	Dropsy	**2** 1.6		**1** 1.8		**4** 1.9		**7** 1.9		**6** 2.2		**5** 2.2		**3** 2.6		2.0
	Cancer	**6** 1.1		**2** 1.5		**4** 1.6		**7** 1.9		**1** 2.1		**3** 2.1		**5** 2.2		1.8
	Consumption	**7** 16.9		**2** 16.9		**4** 18.5		**1** 20.8		**6** 21.0		**5** 21.5		**3** 22.2		19.7
	Other Constitutional Diseases	**3** 1.0		**4** 1.0		**2** 1.4		**5** 1.4		**7** 1.4		**1** 1.7		**6** 2.0		1.4
Nervous.	Apoplexy	**2** 3.8		**4** 4.2		**3** 5.0		**1** 5.2		**7** 6.8		**5** 7.2		**6** 8.2		5.8
	Congestion of Brain	**1** 1.5		**2** 1.5		**7** 1.7		**3** 2.1		**4** 2.5		**5** 2.9		**6** 4.9		2.4
	Paralysis, Softening, etc. of Brain	**2** 5.2		**4** 6.2		**3** 6.5		**1** 7.2		**7** 7.3		**6** 7.5		**5** 7.8		6.8
	Epilepsy and Convulsions	**1** .3		**2** .3		**4** .4		**5** .5		**3** .6		**6** .7		**7** 1.5		.6
	Other Nervous Diseases	**2** .7		**6** 1.0		**7** 1.1		**4** 1.1		**3** 1.2		**1** 1.2		**5** 1.7		1.1
Cir'y.	Diseases of Heart	**2** 4.1		**4** 4.4		**1** 6.1		**5** 6.3		**6** 6.6		**3** 7.1		**7** 7.4		6.0
	Other Circulatory Diseases	**6** .2		**4** .2		**3** .2		**2** .3		**5** .4		**1** .5		**7** 1.8		.5
Respiratory.	Pneumonia	**3** 6.6		**1** 7.3		**2** 8.5		**7** 9.0		**4** 9.8		**5** 10.8		**6** 12.6		9.2
	Congestion of Lungs	**7** .9		**3** 1.2		**2** 1.7		**4** 1.7		**1** 1.8		**5** 2.2		**6** 2.2		1.7
	Bronchitis and Pleurisy	**3** 1.5		**5** 1.8		**1** 1.8		**2** 2.0		**4** 2.0		**7** 2.2		**6** 3.4		2.1
	Abscess, Hemorrhage, etc. of Lungs	**7** 1.8		**6** 1.9		**1** 1.9		**3** 2.0		**2** 2.0		**5** 2.4		**4** 2.4		2.1
	Other Respiratory Diseases	**1** .4		**2** .4		**7** .7		**4** .7		**3** .8		**5** .9		**6** 1.4		.8
Digestive.	Diseases of Stomach	**7** 1.3		**1** 1.6		**4** 1.9		**3** 2.0		**5** 2.1		**2** 2.3		**6** 5.1		2.3
	Diseases of Bowels	**7** 1.6		**1** 1.9		**2** 2.2		**3** 2.5		**4** 2.5		**5** 2.5		**6** 5.8		2.7
	Peritonitis	**7** .3		**6** .5		**1** .7		**5** .7		**2** .8		**4** .8		**3** 1.0		.7
	Diseases of Liver	**2** 2.4		**1** 2.7		**3** 3.7		**4** 3.7		**5** 3.9		**7** 4.2		**6** 4.8		3.6
	Other Digestive Diseases	**7** 1.7		**1** 1.7		**3** 2.0		**2** 2.3		**4** 2.3		**5** 2.7		**6** 5.8		2.6
Miscellaneous.	Diabetes	**6** .3		**4** .4		**3** .5		**2** .5		**1** .5		**7** .6		**5** .8		.5
	Diseases of Kidneys	**2** 1.4		**4** 1.9		**5** 2.1		**6** 2.4		**7** 2.6		**3** 3.1		**1** 3.5		2.4
	Other Urinary Diseases	**4** .5		**7** .7		**2** .8		**1** .9		**5** .9		**3** 1.1		**6** 1.2		.9
	Abscess, Hemorrhage, Old Age	**7** .3		**2** .8		**6** 1.0		**3** 1.1		**4** 1.1		**1** 1.2		**5** 1.3		1.0
	Debility, Exhaustion, Prostration	**4** .7		**2** 1.0		**1** 1.0		**6** 1.1		**7** 1.2		**5** 1.3		**3** 2.4		1.2
	Accidents and Injuries	**3** .6		**1** 7.2		**4** 9.0		**5** 9.3		**2** 9.7		**7** 12.8		**6** 13.3		9.6
	Suicides	**1** 1.3		**3** 1.3		**4** 1.3		**6** 1.4		**5** 1.8		**2** 2.1		**7** 3.3		1.8
	Unknown Causes	**2** 1.0		**3** 1.1		**4** 1.1		**7** 1.3		**5** 1.4		**1** 1.8		**6** 2.5		1.5

GROUPS.

1.
New England.
New York.

2.
Northwest.
Michigan.
Wisconsin.
Minnesota.
Nebraska.

3.
New Jersey.
Pennsylvania.

4.
Ohio.
Indiana.
Illinois.
Iowa.
Kansas.

5.
Delaware.
Maryland.
Dist. Columbia.
Virginia.
Kentucky.
Missouri.

6.
South of 36° 30'.
North Carolina.
South Carolina.
Tennessee.
Georgia.
Florida.
Alabama.
Mississippi.
Arkansas.
Louisiana.
Texas.

7.
Pacific, etc.
Washington.
Oregon.
California.
Utah.
Dakotah.
New Mexico.

more favorable rate of 17 consumptive deaths to 10,000 living. In establishing these important conclusions, the statistics entirely concur without discordance. Invalids experiencing this or any other disease will be interested to note the effect of climatic conditions shown in the accompanying *Sanitary Survey of the United States.*

Relation of Height and Weight.

For convenient reference, the following Standard Table is introduced, showing the average or most healthful Weight relative to a given Height or stature. The medium circumference around the chest is added, although of less importance. "As a rule, twenty per cent. or one-fifth is almost the maximum variation from this within the limits of health." The Table is especially applicable to the medical examination of males between 30 and 60 years of age, relative to consumption.

HEIGHT.	WEIGHT.	MEDIUM CHEST.
5 *feet* 1 *inch*	*Should weigh* 120 *lbs.*	34.06 *inches.*
5 " 2 "	" " 125 "	35.13 "
5 " 3 "	" " 130 "	35.70 "
5 " 4 "	" " 135 "	36.26 "
5 " 5 "	" " 140 "	36.83 "
5 " 6 "	" " 143 "	37.50 "
5 " 7 "	" " 145 "	38.16 "
5 " 8 "	" " 148 "	38.53 "
5 " 9 "	" " 155 "	39.10 "
5 " 10 "	" " 160 "	39.66 "
5 " 11 "	" " 165 "	40.23 "
6 " 0 "	" " 170 "	40.80 "

SECTION III.

The Germ Theory of Malarial Diseases. Table of Sickness and Recovery in Adult Life.

The statistics of Fever in Table IX comprise nine or ten kindred varieties, all of which are included in the general class of Zymotic diseases, of which the family of fevers constitutes about three-fifths. Malarial Fever is used to designate yellow fever, remittent fever, and intermittent fever or fever and ague; to which some would add one or two other varieties, with a part of the cases of fever unspecified. Table XVII (C) will show that Zymotic diseases including fevers, have been the most prevalent in the groups of States, V and VI. And the more extended Table VII will suggest the separation of Alluvial counties, as a class, in which the greatest mortality has occurred. It may also be observed, that a large portion of the insurances in group V are located in the chief cities, including Baltimore, Washington and St. Louis.

The space already given to medical Statistics, will here forbid a more extended discussion of fevers and other diseases. Yet the growing importance of the germ theory of miasm, and its favorable acceptance among physicians, may claim a passing notice.

Our knowledge of the phenomena of fevers, is announced to be especially promoted by discoveries with the microscope. In examining the organs and secretions of persons who have died of fever, the membrane lining the stomach was almost

invariably covered with a multitude of microscopic plants. These often covered the whole intestinal tract; some were found on the surface of the lungs, and some were detected in the blood. On living patients, these parasites have been found in the substance, which is formed at an advanced stage of the fever, at the corners of the mouth and eyes. In the secretions of persons in full health they cannot be detected.

Water taken up and placed in the rays of the sun till stagnant, became coated with a green superficial film, on which the microscope showed plants closely resembling those found in the human body. Some of these parasites showed cell-articulations; others were hollow and others showed nuclei and spores.

A writer on the causes of Ague remarks that of these "ague plants" is formed the greyish film wherever black damp earth is turned up and exposed to the sun. Thence issue innumerable atomic seeds or spores which rise into the air, carrying pestilence with them. The danger from their growth is greatest in a hot dry season following a wet one.

By day, the atmosphere is shown by the microscope to be free from those organisms. After sunset, the spores of the "ague plants" rise with the evening dews, recalling "the pestilence that walketh in darkness."

In different parts of the world, these cryptogamic spores rise in the night mists, to definite heights. In the United States, they seldom rise more than thirty-five to sixty-five feet above the low levels; in England, not more than from fifteen to thirty feet. But the spores of the "ague plants" having risen and become entangled in the mists, may all be carried by the wind, far perhaps from the place of germination.

"Around the entire continent of Africa, except where the headlands jut out into the sea, there extends a belt of low malarious country from twenty to sixty miles wide. Within this belt it is unsafe for an unacclimated person to spend a night, although, as the malaria does not extend higher than about twelve feet from the ground, it is believed that it greatly conduces to health to sleep in the second or third story. Travelers visiting Africa should at once go to the higher lands, not allowing themselves to sleep a single night on the coast."

According to this theory, the therapeutical effect of cinchona bark and its alkaloids, in malarial fevers, is due to a process of withering or destroying the fast growth of the poisonous fungoids in the human system. Recently, Pasteur has extended inoculation with "cultivated" germs of disease, to protect life against the more malignant types.

TABLE OF SICKNESS, RECOVERY AND MORTALITY.*

Precise Age.	At the Beginning of the Yr. of Age.			In the ensuing Twelve Months.			Weeks of Sickness. Average.	
	Number Living.	Number Healthy.	Number Sick.	Cases of Sickness.	Cases of Recovery.	Died.		(1872.)
25	1000	981.3	18.7	222.4	214.2	7.0	.969	0.78
30	1000	980.5	19.5	206.6	197.1	8.5	.998	0.86
35	1000	980.7	19.2	206.6	197.5	8.5	1.024	1.01
40	1000	977.7	22.3	209.4	198.0	11.4	1.160	1.17
45	1000	975.3	24.7	212.4	199.8	12.0	1.304	1.48
50	1000	968.8	31.2	227.1	211.6	14.8	1.644	1.98
55	1000	962.2	37.8	244.4	224.6	19.8	1.973	2.72
60	1000	950.4	49.6	265.1	233.8	27.6	2.684	4.03
65	1000	927.6	72.4	282.6	242.9	34.4	3.913	6.30
70	1000	885.4	114.6	303.7	236.1	55.1	6.306	10.08
75	1000	811.8	188.2	307.8	231.8	78.2	9.760	15.07
80	1000	723.6	276.4	298.6	183.6	135.4	13.664	20 71

* Abstract of 800,000 observations in Friendly Societies, from *Assurance Magazine*, Vol. 16, p. 413. To show *Healthy Life,* cases of chronic sickness and the returns from sailors, miners and colliers were left out by Mr. Finlaison. Only the last column, from Mr. Ratcliffe's collection in (1872), includes *All Classes.*

DIVISION FOURTH.

TIME AND MONETARY TABLES.

For Interest and Annuities Certain.

SECTION I.

The System of Interest and Annuities.

By general custom, interest is understood to increase uniformly, by equal increments of interest in equal times, during twelve months or the period of conversion, and is then added to the principal, to form a new principal. When the interest is added at the end of each successive year, it is said to be compounded annually; when the interest is added to the principal at the end of every six months, it is said to be compounded semi-annually, and so on.

When the rate of interest is 6 per cent. for example, the increase on $1 principal is $0.005 monthly, which at the end of twelve months or a year, amounts to $1.06. Or omitting the character $ or £ the yearly interest on 1 unit of money is in this case 0.06. Let i denote .04, .05, .06 or any other rate of interest on 1 for one year; then will $1+i$ denote the amount at the end of a year. By proportion, $1 : 1+i :: $ new principal $1+i : (1+i)^2$, the amount at the end of two years. In like manner $(1+i)^3$ will be the amount of 1 at the end of three years. And in general, $(1+i)^n$ expresses the *amount* of 1 at the end of n years, with compound interest.

The *present value* of 1 payable at the end of a year, is such a sum v as with its interest, will exactly amount to 1. By proportion $1 : 1+i :: v : 1$; whence $v = \dfrac{1}{1+i} = (1+i)^{-1}$. Thus defined, v is the present value of 1 receivable at the end of a year; and v^n is the present value of 1 payable at the end of n years.

Annuities. On this principle, the whole *amount* of 1 *per annum*, payable at the end of *each year*, with compound interest, will at the end of any number n of years, evidently be the sum of the geometric series,

$$(1+i)^{n-1} + (1+i)^{n-2} + \dots + (1+i) + 1 = \frac{(1+i)^n - 1}{i} = A.$$

In like manner, the whole *present value of* 1 *per annum*, payable and discounted at the end of each year, will be, for n years,

$$v + v^2 + v^3 + \dots + v^n = \frac{v - v^{n+1}}{1 - v} = \frac{1 - (1+i)^{-n}}{i} = V.$$

It may be proper to observe, that the sum of the preceding series has long since been demonstrated without geometrical progression. Thus at the rate of interest i,

the annual income from the so-called perpetuity $\frac{1}{i}$ will evidently be 1, to continue for-ever. Deducting from this, the present value of the perpetuity deferred n years, that is $\frac{(1+i)^{-n}}{i}$, we have the expression equal to V above, or the present value of n annual payments of 1. And multiplying this whole present value by $(1+i)^n$, we reproduce the above amount A for the end of n years.

In practice, these formulas are seldom computed; since time and labor are saved by recourse to the standard Monetary Tables of present values and amounts, calculated for various rates of interest. And *generally,* $1 and its *tabular result,* or the latter alone when *multiplied by the proposed principal or number of dollars, gives the value required,* in practical business.—For the Value of an Increasing Annuity, see page 276.

Table XVIII is a Time Table giving in triple columns the day of the month and the day of the year, also the corresponding decimal of a year of 365 days. The star (*) designates Monday, or one day in the week (as shown in the last column), from which any adjacent day of the week is readily noted. Also from any given date, the interval to the end of the year is found by subtracting the day of the year from 365, in com-mon years, or the corresponding decimal of a year from 1; to be increased for any extension into the following year.

SECTION II.

Interest Tables for Days.

Required the interest on $4500 from May 27 to Sept. 8 at 6 per cent. The difference of the days of the year in the Time Table, 147 and 251, gives the interval 104 days; which guides in the same Table, to the fraction of a year 0.28493. The interest for a whole year is $4500 \times .06$; that is 270; and the product of 270 by the preceding fraction gives $76.93, the interest required. But the next Table is designed to give the interest by a more convenient process.

Table XIX. Simple Interest for Days at 5 per cent. The whole year is accounted to be 365 days; but if required to change the resulting interest to the basis of 360 days to the year, add $\frac{1}{72}$ part to the tabular result.

It will be seen that the interest for days is a circulating decimal of eight places, which can be continued as a repetend to any degree of accuracy. The new arrange-ment here tabulated for the first time, was suggested from the previous construction of the Copy Multiplication Table to be presently described. Both give the products at sight, to be copied and added as in "contracted multiplication."

The given interval of Days, guides first to the *Reference* in the upper part of the Table; and the *Reference* guides to the required multiples of interest in the body of the Table. For illustration, the interval of 111 Days gives the *Ref.* 104 near the top of the page; and 104 guides below to the line which shows the interest on 0, 1, 2, 3, ..., 9. It is needful to observe that after the first three horizontal figures in each column, the other final figures are to be read vertically downward to the drawn line below, then recommencing at the drawn line above to read down again. Indeed these eight final figures between drawn lines, are a repetend or period of eight figures, which may be repeated to any extent. Thus for 111 days (*Ref.* 104), the interest on $1 is $.015 or the horizontal figures to which are annexed the vertical figures 205479 . . . making the interest on $1 to be .01'52054794'52054 . . . In like manner, the interest

on $5, by column 5, is .07´60273972´60...; and on $9, it is .13´68493150´68... The decimal point thus occurs on the left of the tabular interest when the dollars are 9 or a less integer. And the accents merely indicate the part continually repeated.

For any other rate, the interest is first found by the Table at 5 per cent.; and this increased by one-fifth part gives the interest at 6 per cent., by two-fifths gives the interest at 7 per cent. etc. From the interest at 5 per cent. subtract one-tenth part to give the interest at 4½ per cent., or add one-tenth part to give the interest at 5½ per cent. etc.

Example 1. Required the interest on $85,762.00 for 141 days at 7 per cent.

	$85762.00	
The right hand figure of DAYS occurs along the head of	1545.205	8
Table XIX, *Ref.* 110. Each product is copied to begin one place	096.575	5
to the right of its digit in the multiplicand, to bring all the deci-	13.520	7
mal points under each other.	1.158	6
	.038	2

Interest at 5 per cent. - - - - - - - - -	1656.496
Add ⅖ or ₄⁄₁₀ - - - - - - - - - -	662.60
Interest at 7 per cent. - - - - - - - - -	$2319.10

Example 2. What is the amount of $593,704.75 from May 15 to August 28, at 5 per cent. per annum ?

	$593,704.750	
	07,191.780	5
Interval 105 Days,	1,294.520	9
	043.150	3
Table XIX, *Ref.* 132.	10.068	7
	.057	4
	10	7
	0	5

Amount - - - - - -	$602,244.335

Copy Multiplication Table. In this Table, from which the Interest Table originated, the carrying figure is added to the next product figure, as usual, and the sum given by inspection. It presents within a convenient compass, a generalization of the common process, and was suggested to the writer, by the early design of "Napier's rods or bones," by the first Table of Crelle, the Tables of Laundy, and others. For large numbers, or "contracted multiplication," it appears specially adapted, as well as for "proof," or correction of the common method, and various other objects.

The bold types or figures of the Table, taken singly, represent every possible multiplicand, however extended. These are repeated immediately over their product figures, which may be copied rapidly in any order, as from left to right. In a few places, the construction of the Table required 10 to be tabulated as a single figure, denoted by X or x, and so written. But after the usual addition, this character will disappear in the final product. Also by practice, an easy habit may be acquired of reading off two figures at a time. Thus on reading 94 (nine, four) of the multiplicand, look first under 9 only, to read off its product figure 7. passing immediately under 4 to find the other figure 1, and copy 71. The same routine must be strictly followed in every example, as follows:

1. Prefix a small cipher to the multiplier to distinguish it, and to be used as its first figure. On account of "carrying figures" in the construction of the Table, all single ciphers, when effective, are to be treated like significant figures.

MULTIPLICATION.

	0	100	200	300	400	
00	01 23 45 67 89 00 00 00 00 00	01 23 45 67 89 01 23 45 67 89	01 23 45 67 89 02 46 80 24 68	01 23 45 67 89 03 69 25 81 47	01 23 45 67 89 04 82 60 48 26	**00**
12	01 23 45 67 89 00 00 00 00 01	01 23 45 67 89 01 23 45 67 9x	01 23 45 67 89 02 46 80 24 69	01 23 45 67 89 03 69 25 81 48	01 23 45 67 89 04 82 60 48 27	**12**
13	01 23 45 67 89 00 00 00 00 11	01 23 45 67 89 01 23 45 67 9x	01 23 45 67 89 02 46 80 24 79	01 23 45 67 89 03 69 25 81 58	01 23 45 67 89 04 82 60 48 37	**13**
15	01 23 45 67 89 00 00 00 01 11	01 23 45 67 89 01 23 45 68 9x	01 23 45 67 89 02 46 80 25 79	01 23 45 67 89 03 69 25 82 58	01 23 45 67 89 04 82 60 49 37	**15**
17	01 23 45 67 89 00 00 00 11 11	01 23 45 67 89 01 23 45 78 9x	01 23 45 67 89 02 46 80 35 79	01 23 45 67 89 03 69 25 92 58	01 23 45 67 89 04 82 60 59 37	**17**
20	01 23 45 67 89 00 00 01 11 11	01 23 45 67 89 01 23 46 78 90	01 23 45 67 89 02 46 81 35 79	01 23 45 67 89 03 69 26 92 58	01 23 45 67 89 04 82 61 59 37	**20**
23	01 23 45 67 89 00 00 01 11 12	01 23 45 67 89 01 23 46 78 91	01 23 45 67 89 02 46 81 35 7x	01 23 45 67 89 03 69 26 92 59	01 23 45 67 89 04 82 61 59 38	**23**
25	01 23 45 67 89 00 00 11 11 22	01 23 45 67 89 01 23 56 78 x1	01 23 45 67 89 02 46 91 35 8x	01 23 45 67 89 03 69 36 92 69	01 23 45 67 89 04 82 71 59 48	**25**
29	01 23 45 67 89 00 00 11 12 22	01 23 45 67 89 01 23 56 79 x1	01 23 45 67 89 02 46 91 36 8x	01 23 45 67 89 03 69 36 93 69	01 23 45 67 89 04 82 71 5x 48	**29**
30	01 23 45 67 89 00 00 11 12 22	01 23 45 67 89 01 23 56 79 01	01 23 45 67 89 02 46 91 36 80	01 23 45 67 89 03 69 36 93 69	01 23 45 67 89 04 82 71 50 48	**30**
34	01 23 45 67 89 00 01 11 22 23	01 23 45 67 89 01 24 56 89 02	01 23 45 67 89 02 47 91 46 81	01 23 45 67 89 03 6x 36 x3 6x	01 23 45 67 89 04 83 71 60 49	**34**
38	01 23 45 67 89 00 01 11 22 33	01 23 45 67 89 01 24 56 89 12	01 23 45 67 89 02 47 91 46 91	01 23 45 67 89 03 6x 36 x3 7x	01 23 45 67 89 04 83 71 60 59	**38**
40	01 23 45 67 89 00 01 12 22 33	01 23 45 67 89 01 24 57 89 12	01 23 45 67 89 02 47 92 46 91	01 23 45 67 89 03 60 37 03 70	01 23 45 67 89 04 83 72 60 59	**40**
43	01 23 45 67 89 00 01 12 23 33	01 23 45 67 89 01 24 57 8x 12	01 23 45 67 89 02 47 92 47 91	01 23 45 67 89 03 60 37 04 70	01 23 45 67 89 04 83 72 61 59	**43**
45	01 23 45 67 89 00 01 12 23 34	01 23 45 67 89 01 24 57 8x 13	01 23 45 67 89 02 47 92 47 92	01 23 45 67 89 03 60 37 04 71	01 23 45 67 89 04 83 72 61 5x	**45**
50	01 23 45 67 89 00 11 22 33 44	01 23 45 67 89 01 34 67 90 23	01 23 45 67 89 02 57 02 57 02	01 23 45 67 89 03 70 47 14 81	01 23 45 67 89 04 93 82 71 60	**50**
56	01 23 45 67 89 00 11 22 33 45	01 23 45 67 89 01 34 67 90 24	01 23 45 67 89 02 57 02 57 03	01 23 45 67 89 03 70 47 14 82	01 23 45 67 89 04 93 82 71 61	**56**
58	01 23 45 67 89 00 11 22 34 45	01 23 45 67 89 01 34 67 91 24	01 23 45 67 89 02 57 02 58 03	01 23 45 67 89 03 70 47 15 82	01 23 45 67 89 04 93 82 72 61	**58**
60	01 23 45 67 89 00 11 23 34 45	01 23 45 67 89 01 34 68 91 24	01 23 45 67 89 02 57 03 58 03	01 23 45 67 89 03 70 48 15 82	01 23 45 67 89 04 93 83 72 61	**60**
63	01 23 45 67 89 00 11 23 34 55	01 23 45 67 89 01 34 68 91 34	01 23 45 67 89 02 57 03 58 13	01 23 45 67 89 03 70 48 15 92	01 23 45 67 89 04 93 83 72 71	**63**
67	01 23 45 6/ 89 00 12 23 44 56	01 23 45 67 89 01 35 68 x1 35	01 23 45 67 89 02 58 03 68 14	01 23 45 67 89 03 71 48 25 93	01 23 45 67 89 04 94 83 82 72	**67**
70	01 23 45 67 89 00 12 23 45 56	01 23 45 67 89 01 35 68 01 35	01 23 45 67 89 02 58 03 68 14	01 23 45 67 89 03 71 48 25 93	01 23 45 67 89 04 94 83 82 72	**70**
72	01 23 45 67 89 00 12 23 45 56	01 23 45 67 89 01 35 68 02 35	01 23 45 67 89 02 58 03 69 14	01 23 45 67 89 03 71 48 26 93	01 23 45 67 89 04 94 83 83 72	**72**
75	01 23 45 67 89 00 12 33 45 66	01 23 45 67 89 01 35 78 02 45	01 23 45 67 89 02 58 13 69 24	01 23 45 67 89 03 71 58 26 x3	01 23 45 67 89 04 94 93 83 82	**75**
78	01 23 45 67 89 00 12 33 45 67	01 23 45 67 89 01 35 78 02 46	01 23 45 67 89 02 58 13 69 25	01 23 45 67 89 03 71 58 26 x4	01 23 45 67 89 04 94 93 83 83	**78**
80	01 23 45 67 89 00 12 34 45 67	01 23 45 67 89 01 35 79 02 46	01 23 45 67 89 02 58 14 69 25	01 23 45 67 89 03 71 59 26 04	01 23 45 67 89 04 94 94 83 83	**80**
84	01 23 45 67 89 00 12 34 55 67	01 23 45 67 89 01 35 79 12 46	01 23 45 67 89 02 58 14 79 25	01 23 45 67 89 03 71 59 36 04	01 23 45 67 89 04 94 94 93 83	**84**
86	01 23 45 67 89 00 12 34 56 67	01 23 45 67 89 01 35 79 13 46	01 23 45 67 89 02 58 14 7x 25	01 23 45 67 89 03 71 59 37 04	01 23 45 67 89 04 94 94 94 83	**86**
88	01 23 45 67 89 00 12 34 56 77	01 23 45 67 89 01 35 79 13 56	01 23 45 67 89 02 58 14 7x 35	01 23 45 67 89 03 71 59 37 14	01 23 45 67 89 04 94 94 94 93	**88**
89	01 23 45 67 89 00 12 34 56 78	01 23 45 67 89 01 35 79 13 57	01 23 45 67 89 02 58 14 7x 36	01 23 45 67 89 03 71 59 37 15	01 23 45 67 89 04 94 94 94 94	**89**
90	01 23 45 67 89 00 12 34 56 78	01 23 45 67 89 01 35 79 13 57	01 23 45 67 89 02 58 14 70 36	01 23 45 67 89 03 71 59 37 15	01 23 45 67 89 04 94 94 94 94	**90**
	0	**100**	**200**	**300**	**400**	

For intermediate numbers in the side column, use the upper or less. Thus, for 25, 26, 27, or 28, use the line of 25.

MULTIPLICATION.

Each cell is read against the reference row **01 23 45 67 89**.

	500	600	700	800	900	
00	05 05 05 05 05	06 28 40 62 84	07 41 85 29 63	08 64 20 86 42	09 87 65 43 21	00
12	05 05 05 05 06	06 28 40 62 85	07 41 85 29 64	08 64 20 86 43	09 87 65 43 22	12
13	05 05 05 05 16	06 28 40 62 95	07 41 85 29 74	08 64 20 86 53	09 87 65 43 32	13
15	05 05 05 06 16	06 28 40 63 95	07 41 85 2x 74	08 64 20 87 53	09 87 65 44 32	15
17	05 05 05 16 16	06 28 40 73 95	07 41 85 3x 74	08 64 20 97 53	09 87 65 54 32	17
20	05 05 06 16 16	06 28 41 73 95	07 41 86 30 74	08 64 21 97 53	09 87 66 54 32	20
23	05 05 06 16 17	06 28 41 73 96	07 41 86 30 75	08 64 21 97 54	09 87 66 54 33	23
25	05 05 16 16 27	06 28 51 73 x6	07 41 96 30 85	08 64 31 97 64	09 87 76 54 43	25
29	05 05 16 17 27	06 28 51 74 x6	07 41 96 31 85	08 64 31 98 64	09 87 76 55 43	29
30	05 05 16 17 27	06 28 51 74 06	07 41 96 31 85	08 64 31 98 64	09 87 76 55 43	30
34	05 06 16 27 28	06 29 51 84 07	07 42 96 41 86	08 65 31 x8 65	09 88 76 65 44	34
38	05 06 16 27 38	06 29 51 84 17	07 42 96 41 96	08 65 31 x8 75	09 88 76 65 54	38
40	05 06 17 27 38	06 29 52 84 17	07 42 97 41 96	08 65 32 08 75	09 88 77 65 54	40
43	05 06 17 28 38	06 29 52 85 17	07 42 97 42 96	08 65 32 09 75	09 88 77 66 54	43
45	05 06 17 28 39	06 29 52 85 18	07 42 97 42 97	08 65 32 09 76	09 88 77 66 55	45
50	05 16 27 38 49	06 39 62 95 28	07 52 07 52 07	08 75 42 19 86	09 98 87 76 65	50
56	05 16 27 38 4x	06 39 62 95 29	07 52 07 52 08	08 75 42 19 87	09 98 87 76 66	56
58	05 16 27 39 4x	06 39 62 96 29	07 52 07 53 08	08 75 42 1x 87	09 98 87 77 66	58
60	05 16 28 39 40	06 39 63 96 29	07 52 08 53 08	08 75 43 10 87	09 98 88 77 66	60
63	05 16 28 39 50	06 39 63 96 39	07 52 08 53 18	08 75 43 10 97	09 98 88 77 76	63
67	05 17 28 49 51	06 3x 63 x6 3x	07 53 08 63 19	08 76 43 20 98	09 99 88 87 77	67
70	05 17 28 49 51	06 30 63 06 30	07 53 08 63 19	08 76 43 20 98	09 99 88 87 77	70
72	05 17 28 4x 51	06 30 63 07 30	07 53 08 64 19	08 76 43 21 98	09 99 88 88 77	72
75	05 17 38 4x 61	06 30 73 07 40	07 53 18 64 29	08 76 53 21 x8	09 99 98 88 87	75
78	05 17 38 4x 62	06 30 73 07 41	07 53 18 64 2x	08 76 53 21 x9	09 99 98 88 88	78
80	05 17 39 40 62	06 30 74 07 41	07 53 19 64 20	08 76 54 21 09	09 99 99 88 88	80
84	05 17 39 50 62	06 30 74 17 41	07 53 19 74 20	08 76 54 31 09	09 99 99 98 88	84
86	05 17 39 51 62	06 30 74 18 41	07 53 19 75 20	08 76 54 32 09	09 99 99 99 88	86
88	05 17 39 51 72	06 30 74 18 51	07 53 19 75 30	08 76 54 32 19	09 99 99 99 98	88
89	05 17 39 51 73	06 30 74 18 52	07 53 19 75 31	08 76 54 32 1x	09 99 99 99 99	89
90	05 17 39 51 73	06 30 74 18 52	07 53 19 75 31	08 76 54 32 10	09 99 99 99 99	90
	500	600	700	800	900	

2. The rule of arithmetic requires " the multiplicand to be successively multiplied by each figure of the multiplier." So here the left-hand pointer is to be located in the Table once for each single figure of the multiplier, by finding such single figure at the head of the column, and passing down to its two right-hand companion figures, found at the side; such three figures may be termed a triplet. At each location of a triplet, the single figures of the multiplicand are all to be read, and the product figures under them copied; each line beginning one place to the right.

3. When the right-hand figure of the triplet, noted above, *locates between* two given figures of the side column in the Table, always use the upper, or less of the two. And when such two right-hand figures of a triplet are one or both lacking on the right hand of the multiplier, let ciphers be assumed in their place.

Example. Multiply 34986 by 752. To the multiplier 752 prefix a cipher making ^{0752}, which shows there will be four locations of triplets. First "locate" the left-hand pointer in column 0, under the line 75. Here finding each figure of the multiplicand, as 34, etc. read off and copy the figures underneath, as 23 etc. from left to right, with the right hand.

Common Process.	34986	*By the Table.*	34986	*Locations*
	752		^{0752}	*in Table.*
	69972		23664 - - - ^{075}
	174930		20705 - - - 752
	244902		50611 - - - 52^0
Product,	26309472		68862 - - - 2^{00}
		Product,	26309472

Again, locate the left-hand finger or pointer for the triplet 752, in the column 7, under line 52, or rather line 50 which is the next "upper," and beginning to copy 20 etc. one place to the right, proceed as before. Again, locate in column 5, under line 20, etc. Again and lastly, locate in column 2, under line 00, and copy as before. In adding up to obtain the total product, *the sum of each vertical column is the same as when found by the common method.* The separately written triplets ^{075}, 752, etc. noted on the right of the example, for illustration, are to be omitted in practice.

SECTION III.

Compound Interest and Discount Tables. For Twelve Rates of Interest and for 100 Years.

Table XX. The *Amount* of $1 at the end of any number of years; or $(1+i)^n$.

Table XXI. The *Present Value* of $1 due at the end of any number of years; that is v^n or $(1+i)^{-n}$.

Table XXII. The *Amount* of $1 *per annum*, at the end of any number of years; or $\dfrac{(1+i)^n-1}{i}$.

The annuity of $1 is payable at the end of each year.

Table XXIII. The *Present Value* of $1 *per annum*, for any number of years; or $\dfrac{1-(1+i)^{-n}}{i}$.

Table XXIV. The *Annuity* which \$1 will purchase for any number of years; or $\dfrac{i}{1-(1+i)^{-n}}$.

It is the Annual Payment or Annual Sinking Fund to pay a present debt of \$1 with its interest, in any number of years.

Table XXV. Common *Logarithm* of the Present Value of \$1 due at the end of any number of years; $\lambda(1+i)^{-n}$, or λv^n.

As in Milne's treatise, λ denotes the common logarithm of the quantity, before which it is placed.

The above named Monetary Tables are derived from the original series published by *John Smart*, London, 1726. A portion of Smart's Tables, for half years depend on $\sqrt{1+i}$ as the interest factor for six months. But mercantile usage has decided in favor of $(1+i)$ as the yearly factor, and $(1+\frac{1}{2}i)$ as the factor for the odd six months; hence the half-yearly columns in his Tables are not now in use. A part of Smart's Tables, those under 7 per cent., we have here collated with new values computed with four extra decimals, or with the accurate Tables of Chisholm.

Connection of the Tables. It will be observed that for a given value of n and i, Tables XX and XXI are each the reciprocal of the other. Tables XXIII and XXIV, are another couple having the same reciprocal property.

Again, the amounts in Table XX, are the annual differences of Table XXII; and the present values in Table XXI, are the differences of Table XXIII, as will be seen by inspection.

Amount of Premiums paid. For illustration, the annual premium of \$50 has just been paid at the beginning of the seventh year. Required the amount at that date, of the seven premiums, at 4 per cent. By Table XXII the amount of \$1 annual premium is given at \$7.89829; the product of this by 50 is \$394.91, the amount required. Had it been a single premium of \$50 paid six years ago, the different Table XX would give $50 \times 1.2653 = \$63.27$, the amount at compound interest 4 per cent.

Deferred Annuity. If the annuity of \$1 for n years is to be deferred t years and then commence, the present value is evidently shown in the expression,

$$(1+i)^{-t} \times \frac{1-(1+i)^{-n}}{i} = V, \text{ or}$$

$$\frac{1-(1+i)^{-t-n}}{i} - \frac{1-(1+i)^{-t}}{i} = V.$$

That is, from the present value of an annuity for $t+n$ years, withdraw that of t years. A deferred annuity is sometimes called a *reversion* or a *reversionary annuity.* Another phrase for the present value of an annuity of 1, is "the number of years' purchase," or "years' purchase," which occurs on page 66, *Example 3.*

SECTION IV.

To find the Rate of Interest of an Annuity.

In these Monetary Tables at 3, $3\frac{1}{2}$, 4, ... per cent. the differences of $\frac{1}{2}$ or 1 per cent., prove to be so large, that the corresponding columns cannot be correctly interpolated by first differences, horizontally, except when the correction is small. Among

various methods, an approximate solution of the analytic formula was given by Francis Baily in the appendix of his *Doctrine of Interest and Annuities* in 1808. But the writer's examination of this noted problem was suddenly brought to a close, by observing that the tabular quantities to be interpolated are nearly in geometrical progression. Consequently, interpolation must be applicable to their logarithms, adjusted by induction, as follows:

Let n = the given number of years,

$\quad$ X = " " amount, or the present value of \$1 annuity; and

$\quad i$ = its rate of interest.

Entering the proper Table XXII or XXIII, let n, X guide to the tabular values A, B, nearest to X which falls between them, and let a, b denote their respective rates of interest. As before mentioned, let common log. A be denoted by λA, and so generally.

For Amounts in Table XXII, $h = B_{n+1} - B_n$. For Values in Table XXIII, $h = \frac{1}{2}A_{\frac{1}{2}n}$

$$ i = a + (b-a) \times \frac{\lambda(X-h) - \lambda(A-h)}{\lambda(B-h) - \lambda(A-h)}. $$

Example 1. From David Jones on Annuities, page 36. "At what rate per cent. will £20 per annum, amount in 10 years to £232.07?"

Here $n = 10$, and $232.07 \div 20 = 11.6035 = X$ amount of 1 per annum. Table XXII, $13.14199 - 11.73139 = h$; or $h = 1.41$. $\quad \lambda(X-h) = 1.00832333$.

$$ a = 0.03, \qquad A = 11.463879, \qquad \lambda(A-h) = 1.00233365. $$
$$ b = 0.035, \qquad B = 11.731393, \qquad \lambda(B-h) = 1.01373832. $$

$$ i = .03 + .005 \times \frac{.0059897}{.0114047} = 0.0326260. $$

The true value is 0.0326261, showing a difference of 1 only in the last decimal place. A less correct result 0.03239 was found from first differences of the numbers X, A, B.

Example 2. An annual payment of \$1 at the end of each year, has amounted to \$763.387795 at the end of 81 years. Required the rate of compound interest, to be interpolated from the columns, at 4 and 5 per cent. in Table XXII.

Here $n = 81$, $\quad h = B_{82} - B_{81} = 52.039513$, $\quad a = .04$, $\quad b = 05$.

$$ \lambda(X-h) = 2.8520823, \qquad \lambda(A-h) = 2.7178828, \qquad \lambda(B-h) = 2.9862120. $$

$$ i = 0.04 + .01 \times \frac{.1341995}{.2683292} = .045001; \text{ true value } .045000. $$

Example 3. "The Long Annuities, which have 30 years to run, are now sold at 19 years' purchase; what rate of interest does the purchaser obtain for his money?" From David Jones' treatise, page 42.

By Table XXIII, since $n = 30$, $\quad h = \frac{1}{2}A_{15} = 5.968968$, $\quad a = .03$, $\quad b = .035$.

$X = 19$; $\lambda(X-h) = 1.1149788$, $\quad \lambda(A-h) = 1.1345428$, $\quad \lambda(B-h) = 1.0942292$.

$$ i = 0.03 + .005 \times \frac{.0195640}{.0403136} = 0.032426. $$

The true value found by Woolhouse, is 0.032425. The preceding method can also be applied to interpolate Life Annuities, according to the relations of Makeham's law.

NOTE.—Since the ratio $1+i$ differs not greatly from unity, the known average of the sum of the terms must be nearly equal to the unknown middle term of the geometric series. With some adjustment, we have thus found a ready approximation from the *amount* of \$1 annuity :

$$\lambda(1+i) = \left(\frac{1}{\frac{1}{2}n} - \frac{1}{200}\right) \times \lambda \frac{X-1}{n-1}, \text{ nearly.}$$

This formula when applied to the first two of the preceding examples, gives approximately .03250 and .04537, which may be further corrected by the method of trial and error with the following formula for X or A.

The other elements, *amount, present value* and the *time n* are precisely determined by the formulas :

$$\text{For Amount,} \quad A = \frac{(1+i)^n - 1}{i}, \qquad n = \frac{\lambda(1+iA)}{\lambda(1+i)}.$$

$$\text{For Present Value,} \quad V = \frac{1-(1+i)^{-n}}{i}, \qquad n = -\frac{\lambda(1-iV)}{\lambda(1+i)}.$$

SECTION V.

To find the Rate of Interest on the Price of Funded Stocks or Bonds.

In the first case, let us suppose that the stocks are arranged to pay a fixed interest forever, or perpetuities, so called, as in most of the government debts of Europe. For illustration, if £100 in the 3 per cent. British consols are sold for £93 ; the simple proportion $93 : 3 :: 100 : x$, gives 3.226 the rate of interest, to be realized on the purchase. Although the £3 is paid half-yearly, the difference from an annual payment is not here regarded, on account of the frequent change of rate, or delays in the re-investment of small sums.

In the second case, as in the public funds of the United States, let the interest cease, and the principal be repaid, at the end of a stated number of years.

Example 1. A Bond bearing 6 per cent. interest, and having 20 years to run, the principal being then payable, is bought at the price of \$1.05 on the dollar of par value. What rate of interest will the purchaser have received at maturity?

> Let i' = the required rate of interest on the transaction.
> i = the given rate of interest on the Bond.
> p = the purchase price per dollar of the principal of the Bond.
> n = the number of years the Bond is to run.

Strictly, the annual interest i is to be regarded as an annuity for n years; the present value of which at the rate i', is evidently $\dfrac{1-(1+i')^{-n}}{i'} \times i$ or $(1-v'^n)\dfrac{i}{i'}$.

The purchase price p must be equated to this, plus the present value v'^n of each \$1 of the principal, stipulated to be paid at the end of n years. That is,

$$p = (1-v'^n) \times \frac{i}{i'} + v'^n; \text{ whence } i' = \frac{i}{p} + \frac{i\left(\frac{1}{p}-1\right)}{p(1+i')^n - 1},$$

$$i' = \frac{i(1-v'^n)}{p - v'^n} = i + \frac{i(1-p)}{p - v'^n}.$$

For $p=1$, $i'=i$. For $n=1$, $i'=\dfrac{i}{p}+\left(\dfrac{1}{p}-1\right)$. For Perpetuities, $n=\infty$, $i'=\dfrac{i}{p}$.

As the period n approaches 40 years and upward, this last formula gives a close approximation.

For a more general approximation, we assume the amount $p(1+i')^n=(1+i)^n$. Substituting this in the right-hand member preceding, we have a very convenient second approximation, which being further corrected by an interpolated time n', for ordinary rates, leads to $\quad n'=n+0.6\left(\dfrac{1}{p}-1\right)n$,

$$i'=i+\left(\dfrac{1}{p}-1\right).\mathrm{V}_{n'}; \quad \text{where } \mathrm{V}_{n'}=\dfrac{i}{1-v^{n'}}, \text{ given in Table XXIV.}$$

<div align="center">

TABLE OF THE AUXILIARY FACTOR $\left(\dfrac{1}{p}-1\right)$.

</div>

Price on 100.	0	1	2	3	4	5	6	7	8	9
5	1.0000	0.9608	0.9231	0.8868	0.8519	0.8182	0.7857	0.7544	0.7241	0.6949
6	0.6667	.6393	.6129	.5873	.5625	.5385	.5152	.4925	.4706	.4493
7	0.4286	.4085	.3889	.3699	.3514	.3333	.3156	.2987	.2821	.2658
8	0.2500	.2346	.2195	.2048	.1905	.1765	.1628	.1494	.1364	.1236
9	0.1111	.0989	.0870	.0753	.0638	.0526	.0417	.0309	.0204	.0101
10	−.0000	−.0099	−.0196	−.0291	−.0385	−.0476	−.0566	−.0654	−.0741	−.0826
11	−.0909	−.0991	−.1071	−.1150	−.1228	−.1304	−.1379	−.1453	−.1525	−.1597
12	−.1667	−.1736	−.1803	−.1870	−.1935	−.2000	−.2063	−.2126	−.2187	−.2248
13	−.2308	−.2366	−.2424	−.2481	−.2537	−.2593	−.2647	−.2701	−.2754	−.2806
14	−.2857	−.2908	−.2958	−.3007	−.3056	−.3103	−.3151	−.3197	−.3243	−.3289

The new expression for i' will be sufficient for most purposes. By successive substitution, however, in the right-hand member of the original formula preceding, the approximation can be carried to any extent of accuracy.

In the Example stated above, the price on 100 is 105, or $p=1.05$. Also $n'=20-0.6\times.0476\times20=19.4$ years; whence the required rate of interest

$$i'=.06-.048\times.088=.06-.0042=.0558.$$

Here the factor $-.048$ or rather $.0476$ is found in the above Table, corresponding with the price 105; and the other factor V or $.088$ corresponds to n' or 19.4 years and 6 per cent. in Table XXIV. Provided the Bond is continued to maturity, the approximate interest realized on the purchase will be 5.58 per cent.

Example 2. Required the rate of interest to be realized when the price is 75 on the 100, or $p=0.75$, the rate of interest i being 7 per cent., and the Bond to be redeemed in 40 years. Here $n'=40+0.6\times.333\times40=48$ years; then $i'=.07+.333\times.0728=.0942$; that is, 9.42 per cent. on the purchase price.

Example 3. When $n=30$ years, $i=.06$, $p=0.5$. Then $n'=30+.6\times1\times30=48$ years, $i'=.06+1\times.0639=.1239$. The result 12.39 per cent. is correct to four places, as verified.

It is worthy of remark that in these three arbitrary examples, having periods of 20, 40 and 30 years, the approximate formula, $i'=i\div p$, should give results so near the truth as 5.71, 9.33 and 12.00; the true rates being 5.58, 9.42, and 12.39 per cent, respectively.

SECTION VI.

Interest Compounded Oftener than Once a Year.

When interest is compounded at m equal intervals in a year, the amount at the end of the first of them is $\left(1+\dfrac{i}{m}\right)$; and this raised to the mth power, gives the amount at the end of m terms, or one year; thus:

$$\left(1+\frac{i}{m}\right)^m = 1+i+\frac{1-\dfrac{1}{m}}{1.2}i^2+\frac{\left(1-\dfrac{1}{m}\right)\left(1-\dfrac{2}{m}\right)}{1.2.3}i^3+\ldots.$$

When interest is compounded *momently* or at the end of every instant, the number of intervals m in a year becomes very great or infinite, which evidently causes m to vanish in the right-hand member, leaving at the year's end,

$$\left(1+\frac{i}{m}\right)^m = 1+i+\frac{1}{1.2}i^2+\frac{1}{1.2.3}i^3+\ldots. = \varepsilon^i.$$

Here ε is the number whose Napierian logarithm is 1; that is $\varepsilon = 2.7182818285$. Thus on the supposition of compounding momently, the amount of \$1 principal at the end of n years, will be ε^{in}.

In the common formulas of compound interest, the interest for one interval may take the place of *annual interest*, when *periods of conversion* are substituted for the number of *years*. And if there are m equal periods in one year, there will evidently be mn equal periods in n years. Writing m equal to 1, 2, 4, or infinity, let Y, H, Q, M denote the Amount of \$1 with its compound interest, at the end of n years, according as the interest is convertible into principal, Yearly, Half-yearly, Quarterly, or Momently.

Then $\qquad$ $Y = (1+i)^n$, $\qquad\qquad\qquad\qquad$ $Q = \left(1+\dfrac{i}{4}\right)^{4n}$,

$\qquad\qquad$ $H = \left(1+\dfrac{i}{2}\right)^{2n}$, $\qquad\qquad\qquad\qquad$ $M = \varepsilon^{in}$.

The *Present Value* of 1 due n years hence, with interest compounded m times in the year, is

$$\left(1+\frac{i}{m}\right)^{-mn}$$

In the case of *Annuities payable half-yearly, quarterly,* or generally m times in the year, let us *firstly* assume the interest to be compounded in the same way, or m times in the year, and that the annuity or yearly payment of 1 is divided into m payments of $\dfrac{1}{m}$ each, at equal intervals. Then by substitution as shown by Dr. Price:

$$\text{Amount of Annuity for } n \text{ years} = \frac{1}{m}\cdot\frac{m}{i}\left[\left(1+\frac{i}{m}\right)^{mn}-1\right].$$

$$\text{Present Value of Annuity for } n \text{ years} = \frac{1}{i}\left[1-\left(1+\frac{i}{m}\right)^{-mn}\right].$$

When payable yearly, $m = 1$; half-yearly, $m = 2$; quarterly, $m = 4$.

Secondly and more generally, let interest be convertible m times in a year, and the *annuity* be payable m' times, each payment being $\frac{1}{m'}$. In this case, the discount factor to give the present value for one year, is $\left(1+\frac{i}{m}\right)^{-m}$; or for t years, or a fraction, the factor is $\left(1+\frac{i}{m}\right)^{-mt}$. Now dividing one year by the number of its payments of annuity, we have $\frac{1}{m'} = t$, the time or interval from one payment to another. Hence the present value of the $m'n$ payments in n years, will be the sum of the geometric progression; since $m't = 1$:

$$\frac{1}{m'}\left[\left(1+\frac{i}{m}\right)^{-mt}+\left(1+\frac{i}{m}\right)^{-2mt}+\ldots+\left(1+\frac{i}{m}\right)^{-m'nmt}\right].$$

$$=\frac{1}{m'}\times\frac{\left(1+\frac{i}{m}\right)^{-mt}-\left(1+\frac{i}{m}\right)^{-nm-mt}}{1-\left(1+\frac{i}{m}\right)^{-mt}}=\frac{1}{m'}\times\frac{1-\left(1+\frac{i}{m}\right)^{-mn}}{\left(1+\frac{i}{m}\right)^{mt}-1}.$$

When m and m' are equal, this manifestly coincides with the last formula on page 69.

In the denominator, developing by the binomial theorem, since $\frac{1}{m'} = t$,

$$\left(1+\frac{i}{m}\right)^{mt}-1=\frac{i}{m'}\left[1+\left(\frac{1}{m'}-\frac{1}{m}\right)\frac{i}{2}+\left(\frac{1}{m'}-\frac{1}{m}\right)\left(\frac{1}{m'}-\frac{2}{m}\right)\frac{i^2}{1.2.3}+\ldots\right]$$

Substituting the series in the above denominator, and dividing,

$$\text{Present Value}=\left[\frac{1}{i}+\frac{1}{2}\left(\frac{1}{m}-\frac{1}{m'}\right)-\left(\frac{1}{m^2}-\frac{1}{m'^2}\right).\frac{i\left(1-\frac{i}{2m}\right)}{12}+\ldots\right]\times\left[1-\left(1+\frac{i}{m}\right)^{-nm}\right].$$

In the case of annual interest, or $m = 1$, we have,

$$\text{Present Value}=\left(\frac{1}{i}+\frac{m'-1}{2m'}\right).[1-(1+i)^{-n}],\text{ nearly,}$$

$$=\frac{1-(1+i)^{-n}}{i}+\frac{m'-1}{2m'},\text{ nearly, }=V_n+\frac{m'-1}{2m'}.$$

When the annuity is half-yearly, or $m' = 2$, the last term becomes 0.25; which agrees with the usual approximate correction for Life Annuities. More accurately, when $i = .04$, the third term of the series above, when united to the second, gives 0.24755. This correction from Annuities Certain, strikingly agrees with those computed by Mr. Sprague from Life Annuities at ages where the initial rate of mortality plus that of interest equals 4 per cent. Compare *Journal of the Institute*, Vol. 13, pp. 212, 308.

Finally for illustration, the annexed Table from David Jones on Annuities will indicate the effect of compounding oftener than once a year to increase the yearly rate of interest. In long periods of years, the difference becomes more material;

AMOUNT OF $1 IN ONE YEAR, AND ITS LOGARITHM.

ANNUAL RATE OF INTEREST.	PAY-ABLE.	AMOUNT IN ONE YEAR.	LOGARITHM.	ANNUAL RATE OF INTEREST.	PAY-ABLE.	AMOUNT IN ONE YEAR.	LOGARITHM.
2 per cent.	Y	1.020000	.00860 01718	5 per cent.	Y	1.050000	.02118 92991
	H	1.020100	.00864 27476		H	1.050625	.02144 77: 08
	Q	1.020150	.00866 42470		Q	1.050946	.02158 01275
	M	1.020201	.00868 58896		M	1.051271	.02171 47241
2½ per cent.	Y	1.025000	.01072 38654	6 per cent.	Y	1.060000	.02530 58653
	H	1.025156	.01079 00638		H	1.060900	.02567 44494
	Q	1.025235	.01082 35735		Q	1.061364	.02586 41690
	M	1.025315	.01085 73620		M	1.061837	.02605 76689
3 per cent.	Y	1.030000	.01283 72247	7 per cent.	Y	1.070000	.02938 37777
	H	1.030225	.01293 20845		H	1.071225	.02988 06996
	Q	1.030339	.01298 02193		Q	1.071859	.03013 76716
	M	1.030454	.01302 88345		M	1.072508	.03040 06137
3½ per cent.	Y	1.035000	.01494 03498	8 per cent.	Y	1.080000	.03342 37555
	H	1.035306	.01506 88358		H	1.081600	.03406 66786
	Q	1.035462	.01513 41909		Q	1.082432	.03440 06870
	M	1.035620	.01520 03069		M	1.083287	.03474 35586
4 per cent.	Y	1.040000	.01703 33393	9 per cent.	Y	1.090000	.03742 64979
	H	1.040400	.01720 03435		H	1.092025	.03823 25809
	Q	1.040604	.01728 54951		Q	1.093083	.03865 32667
	M	1.040811	.01737 17793		M	1.094175	.03908 65034

NOTE.—The period required for a given principal to double itself at compound interest, is defined by the well-known equation for n years,

$$(1+i)^n = 2, \qquad n = \frac{\log. 2}{\log.(1+i)} = \frac{69.31}{i} + 0.35 \text{ nearly.} \qquad \text{Also } \left(1 + \frac{i}{m}\right)^{mn} = 2.$$

Thus, dividing 70 by the rate of interest as an integer, will give a close approximation, easily remembered. In the last formula making $m = 1, 2, 4$, and infinite as before, we find the following more exact series.

Doubling Period in Years and Decimals.

Interest compounded *yearly* :

Rate per cent.	2	3	4	5	6	7	8
Doubling Period.	35.004	23.450	17.673	14.207	11.896	10.245	9.006

Interest compounded *semi-annually* :

Rate per cent.	2	3	4	5	6	7	
Doubling Period.	34.830	23.278	17.502	14.036	11.725	10.075	8.837

Interest compounded *quarterly* :

Rate per cent.	2	3	4	5	6	7	8
Doubling Period.	34.743	23.191	17.415	13.946	11.639	9.989	8.751

Interest compounded *momently* :

Rate per cent.	2	3	4	5	6	7	8
Doubling Period.	34.657	23.105	17.329	13.863	11.552	9.902	8.665

TABLES IN PART FIRST.

MALE LIFE. SUMMARY (A). OBSERVATIONS CLASSIFIED ACCORDING TO THE AGE OF EXIT OR EXPOSURE.

Age at Exit.	Whole Number of Entrants, 982,734.				2,568,856 Thousand Dollars Insured.				Age at Exit or Exposure.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'd.	Death Claims.	Exposed to Risk.	
0	1			3.5	1			6.5	0– ½
1	9	1		34	18	2		66	½– 1½
2	8	7		69	19	9		144.5	1½– 2½
3	6	8		86	13	26		186	2½– 3½
4	5	8		99	11	15		211.5	3½– 4½
5	10	12		107	19	25		230	4½– 5½
6	8	9		105.5	16	19		230.5	5½– 6½
7	10	10	2	110	20	21	6	241	6½– 7½
8	14	15		108.5	31	24		237	7½– 8½
9	7	11	1	107.5	23	25	1	228.5	8½– 9½
10	20	14		139	49	20		289.5	9½–10½
11	20	28		174	42	43		361.5	10½–11½
12	32	35		239	58	59		490.5	11½–12½
13	34	46	2	361.5	76	77	3	741.5	12½–13½
14	74	97	3	732.5	129	199	3	1,499	13½–14½
15	96	212	3	1,405	226	388	4	2,863	14½–15½
16	224	394	11	2,375.5	411	764	17	4,632.5	15½–16½
17	353	615	24	3,693	667	1,132	36	7,134	16½–17½
18	639	972	32	5,736.5	1,188	1,817	55	11,035.5	17½–18½
19	940	1,782	68	8,857.5	1,666	3,261	118	16,774.5	18½–19½
20	1,536	2,845	116	13,773.5	2,783	5,308	200	26,120	19½–20½
21	2,383	4,323	158	21,040.5	4,376	8,210	266	41,378.5	20½–21½
22	3,246	6,335	200	30,596	6,297	12,672	333	62,732	21½–22½
23	4,452	8,488	312	42,003	8,711	17,543	609	89,221.5	22½–23½
24	6,044	10,333	326	54,367.5	12,056	22,187	707	119,483	23½–24½
25	7,309	11,753	468	67,546.5	14,780	26,663	1,002	152,867.5	24½–25½
26	8,879	13,346	530	80,629	18,739	30,876	1,229	186,725	25½–26½
27	10,221	13,891	639	92.781	21,831	33,441	1,452	218,231.5	26½–27½
28	11,799	14,782	758	106,513	25,843	35,733	1,734	250.743.5	27½–28½
29	12,876	15,751	784	118,901	28,841	38,245	1,925	281,450	28½–29½
30	17,480	16,082	819	129,868	32,578	40,227	2,093	312,842.5	29½–30½
31	15,092	16,571	961	136.354	34,273	42,664	2,410	339,736	30½–31½
32	15,991	16,130	979	143,956.5	37,781	42,288	2,444	361,484	31½–32½
33	16,618	16,148	1,057	151,141	38,901	42,554	2,788	381,961	32½–33½
34	17,784	16,351	1,193	157,277.5	42,133	43,599	3,213	400,764.5	33½–34½
35	17,712	16,286	1,196	161,673.5	43,697	43,855	3,234	414,914.5	34½–35½
36	18,444	16,477	1,218	165,280.5	46,172	44,175	3,380	427,076	35½–36½
37	18,806	15,497	1,299	166,330	47,066	43,243	4,028	432,046	36½–37½
38	18,850	14,888	1,403	166,100	45,893	41,408	3,865	432,402	37½–38½
39	19,317	14,325	1,398	164,729.5	47,916	40,246	3,931	432,874	38½–39½
40	19,351	13,675	1,401	162,619	48,845	38,935	3,823	430,914.5	39½–40½
41	19,683	13,234	1,430	158,904.5	49,273	37,094	4,091	425,161.5	40½–41½
42	18,465	12,134	1,401	152,323	46,579	35,982	4,023	413,268	41½–42½
43	17,165	11,438	1,456	146,097	44,676	33,604	3,941	401,060	42½–43½
44	17,305	10,671	1,446	139,838	44,846	31,433	4,055	387,327	43½–44½
45	16,605	9,847	1,244	133,033.5	43,646	29,657	3,453	372,103	44½–45½
46	16,518	9,235	1,339	126,308.5	43,846	27,922	4,012	356,838.5	45½–46½
47	15,230	8,397	1,325	117,740	41,080	25,782	3,827	336,969	46½–47½
48	13,811	7,536	1,280	109,560.5	37,684	24,249	3,905	317,001	47½–48½
49	13,191	6,891	1,157	102,105	36,291	21,180	3,565	298,249.5	48½–49½

TABLE I.   75

MALE LIFE. SUMMARY (A). OBSERVATIONS CLASSIFIED ACCORDING TO THE AGE OF EXIT OR EXPOSURE.

Age at Exit.	Whole Number of Entrants, 982,734.				2,568,856 Thousand Dollars Insured.				Age at Exit or Exposure.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'd.	Death Claims.	Exposed to Risk.	
50	12,511	6,243	1,192	94,951.5	34,761	19,532	3,554	280,485	49½–50½
51	11,365	5,780	1,187	87,291	32,004	18,619	3,606	260,386	50½–51½
52	10,643	4,935	1,108	79,336.5	30,397	16,366	3,487	238,306.5	51½–52½
53	9,686	4,413	1,032	71,744	27,339	14,529	3,227	216,122	52½–53½
54	9,480	3,849	988	64,574.5	27,483	13,619	2,975	195,270	53½–54½
55	8,335	3,294	982	57,089.5	25,161	11,550	3,183	172,957.5	54½–55½
56	7,582	2,824	876	50,184	22,555	9,552	2,744	151,660	55½–56½
57	6,519	2,360	813	43,729	19,400	8,194	2,718	132,555	56½–57½
58	5,612	1,922	756	38,164.5	16,246	6,837	2,313	115,575	57½–58½
59	4,985	1,640	721	33,284.5	14,851	5,756	2,300	101,140.5	58½–59½
60	4,178	1,348	733	28,892	12,630	4,891	2,102	87.621	59½–60½
61	3,637	1,060	649	24,959.5	11,274	3,784	2,130	75,419.5	60½–61½
62	3,313	798	531	21,189	9,528	2,915	1,624	63,379.5	61½–62½
63	2,849	605	509	17,725	8,712	2,275	1,686	53,175	62½–63½
64	2,333	499	457	14,678.5	6,748	1,907	1,336	43,325	63½–64½
65	2,056	407	416	12,116.5	6,023	1,258	1,517	35,712	64½–65½
66	1,634	311	368	9,732	4,797	1,204	1,080	28,233	65½–66½
67	1,395	246	271	7,716.5	3,867	798	815	22,082.5	66½–67½
68	1,071	150	259	6,042.5	3,176	601	792	17,188.5	67½–68½
69	837	130	224	4,694	2,610	431	600	13,025.5	68½–69½
70	586	95	189	3,595.5	1,602	334	528	9,625	69½–70½
71	469	68	134	2,783.5	1,289	211	353	7,322	70½–71½
72	365	52	136	2,148	1,043	134	348	5,576.5	71½–72½
73	300	31	93	1,627	749	77	236	4,131.5	72½–73½
74	216	24	80	1,221.5	512	73	176	3,104.5	73½–74½
75	146	20	60	914.5	426	37	143	2,382	74½–75½
76	94	7	53	701.5	305	11	129	1,800	75½–76½
77	77	10	54	547.5	244	20	96	1,353	76½–77½
78	51	8	47	410	135	16	102	998.5	77½–78½
79	39	7	29	306.5	86	14	86	749	78½–79½
80	39	6	21	232	109	13	50	563.5	79½–80½
81	28	3	18	168.5	77	7	36	395.5	80½–81½
82	16	7	21	119	46	15	38	273	81½–82½
83	12		7	79	43		20	182	82½–83½
84	3	1	7	59.5	11	1	13	118.5	83½–84½
85	12	2	6	48	29	4	11	92	84½–85½
86	3		5	29	10		11	50	85½–86½
87	1		4	21	3		5	29	86½–87½
88	4		2	16.5	5		2	21.5	87½–88½
89	1		3	11	1		7	15	88½–89½
90		1	2	6.5		1	2	6.5	89½–90½
91				4				4	90½–91½
92	1		1	4	1		1	4	91½–92½
93			1	2			1	2	92½–93½
94				1				1	93½–94½
95			1	1			1	1	94½–95½
	527,157	411,092	44,485	4,327,086.0	1,328,404	1,114,487	125,965	11,493,967.5	

TABLE I.

MALE LIFE. SUMMARY (B). OBSERVATIONS CLASSIFIED ACCORDING TO YEARS OF INSURANCE.

Years of Insurance.	WHOLE NUMBER OF ENTRANTS, 982,734.				2,568,856 THOUSAND DOLLARS INSURED.				Duration of Insurance.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'd.	Death Claims.	Exposed to Risk.	
0	60,190	46,913	2,943	467,910.5	153,950	99,417	7,787	1,234,719.5	0 – ½
1	51,189	158,722	6,428	793,327	132,847	378,590	18,131	2,118,407	½ – 1½
2	49,307	67,850	5,733	622,424	113,202	208,799	16,668	1,673,734.5	1½ – 2½
3	45,000	44,573	5,114	511,172.5	105,929	140,830	14,531	1,369,050	2½ – 3½
4	48,697	30,418	4,623	423,563	117,147	98,064	13,409	1,129,143	3½ – 4½
5	48,237	21,452	3,911	344,308	126,106	69,899	11,213	914,605.5	4½ – 5½
6	48,663	14,043	3,205	274,412.5	127,146	44,140	9,166	720,267	5½ – 6½
7	45,160	11,563	2,569	209,741.5	117,454	30,606	7,311	546,582	6½ – 7½
8	38,200	5,352	1,837	153,555	100,312	15,703	5,045	398,662.5	7½ – 8½
9	28,037	3,231	1,344	109,226.5	69,922	8,937	3,525	280,985.5	8½ – 9½
10	18,210	2,146	982	77,157	43,800	6,006	2,619	200,067	9½ – 10½
11	10,977	1,359	751	56,212.5	26,698	3,688	2,153	148,801	10½ – 11½
12	5,120	830	647	43,390	13,301	2,349	1,805	116,931.5	11½ – 12½
13	3,779	586	519	36,915	10,656	1,730	1,472	99.786	12½ – 13½
14	4,123	574	469	32,037	11,331	1,624	1,290	85,981	13½ – 14½
15	3,110	304	399	27,006	8,506	843	1,080	72,126.5	14½ – 15½
16	2,254	261	401	23,214.5	6,229	734	1,201	61,752	15½ – 16½
17	1,916	180	349	20,339	4,706	528	987	53,691	16½ – 17½
18	1,707	157	298	17,905.5	4,452	390	951	47,539	17½ – 18½
19	1,377	124	303	15,760	3,914	325	758	41,778.5	18½ – 19½
20	1,148	110	270	13,963	3,114	337	758	36,775.5	19½ – 20½
21	950	95	269	12,442.5	2,499	261	771	32.604.5	20½ – 21½
22	1,019	77	274	11,137.5	2,529	230	837	29,089	21½ – 22½
23	1,541	61	261	9,775.5	3,790	184	768	25,516	22½ – 23½
24	2,140	35	218	7,925.5	4,977	82	605	20,825	23½ – 24½
25	1,946	24	155	5,538	4,679	53	490	15,175.5	24½ – 25½
26	1,420	28	105	3,411	4,094	85	329	9,937.5	25½ – 26½
27	930	10	54	1,867	2,838	23	161	5,460.5	26½ – 27½
28	467	6	31	875	1,391	9	83	2,445.5	27½ – 28½
29	189	5	10	371.5	453	17	15	958.5	28½ – 29½
30	154	1	8	169.5	432	3	31	480.5	29½ – 30½
31				7				16	30½ – 31½
32			1	7			1	16	31½ – 32½
33			1	6			5	15	32½ – 33½
34		2	1	4		1	2	9.5	33½ – 34½
35				2				7	34½ – 35½
36				2				7	35½ – 36½
37				2				7	36½ – 37½
38			1	2			2	7	37½ – 38½
39			1	1			5	5	38½ – 39½
	527,157	411,092	44,485	4,327,086.0	1,328,404	1,114,487	125,965	11,493,967.5	

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Excepting the first Aggregates, the Amounts Insured are stated in THOUSAND DOLLARS in the columns $, where 1 denotes $1000, etc.

Age at Entry, 0 Years.

No. of Entrants, 7. — $13,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	1			3.5	1			6.5	0
1				6				12	1
2		1		5.5		1		11·5	2
3		1		4.5		3		9.5	3
4				4				8	4
5	2			4	2			8	5
6				2				6	6
7				2				6	7
8				2				6	8
9				2				6	9
10	1			2	3			6	10
11				1				3	11
12	1			1	3			3	12
	5	2		39.5	9	4		91.5	

Age at Entry, 1 Year.

No. of Entrants, 57. — $110,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	9	1		28	18	2		54	1
1	4	6		44	9	8		86	2
2	5			37	11			73	3
3	3	3		30.5	8	5		59.5	4
4	1	4		24	2	7		45.5	5
5	4			21	8			40	6
6	2			17	3			32	7
7	4	2		14	10	3		27.5	8
8		1		8.5		2		15	9
9	2			8	3			14	10
10	2			6	4			11	11
11	1			4	1			7	12
12	2			3	5			6	13
13				1				1	14
14				1				1	15
15				1				1	16
16				1				1	17
17				1				1	18
18				1				1	19
19				1				1	20
20				1				1	21
21		1		.5		1		.5	22
	39	18		253.5	82	28		479.0	

Age at Entry, 2 Years.

No. of Entrants, 39. — $94,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	4			19.5	10			47	2
1		6		32		22		73	3
2	1	3		27.5	1	6		59	4
3	4	1		24.5	9	2		54	5
4	1	2		19	2	4		42	6
5	4	2	1	16	10	3	1	36.5	7
6	3	1		9.5	8	3		22.5	8
7	1			6	2			13	9
8	4			5	8			11	10
9				1				3	11
10				1				3	12
11				1				3	13
12				1				3	14
13	1			1	3			3	15
	23	15	1	164.0	53	40	1	373.0	

Age at Entry, 3 Years.

No. of Entrants, 26. — $62,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	1	1		12.5	2	1		30.5	3
1		2		23		4		57	4
2	1	5		19.5	1	13		48.5	5
3		3		14.5		8		37	6
4		1		12.5		3		31.5	7
5	2	2		11	5	3		28.5	8
6	1	1		7.5	3	5		19.5	9
7	1			6	2			14	10
8	3			5	7			12	11
9	1			2	3			5	12
10	1			1	2			2	13
	11	15		114.5	25	37		285.5	

Age at Entry, 4 Years.

No. of Entrants, 28. — $56,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	1			14	2			28	4
1		2		26		3		52.5	5
2	1	2		24	2	4		49	6
3	2	3		20.5	4	5		42.5	7
4		1		16.5		2		35	8

OBSERVATIONS ON MALE LIFE.

Age at Entry, 4 Years.

Years of Insurance.	No. of Entrants, 28.				$56,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
5	1			16	2			34	9
6	1	3		13.5	3	5		29.5	10
7	1	1		10.5	2	1		23.5	11
8	2			9	5			21	12
9	3			7	7			16	13
10	2			4	4			9	14
11	1			2	3			5	15
12				1				2	16
13	1			1	2			2	17
	16	12		165.0	36	20		349.0	

Age at Entry, 5 Years.

Years of Insurance.	No. of Entrants, 18.				$43,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	2			9	5			21.5	5
1	1	1		15.5	2	2		37	6
2	1	2	1	13	1	7	5	30.5	7
3		1		9.5		2		20	8
4	1	1		8.5	2	3		17.5	9
5	2			7	4			14	10
6	1			5	2			10	11
7		1		3.5			1	7.5	12
8	1			3	3			7	13
9	1			2	2			4	14
10				1				2	15
11				1				2	16
12	1			1	2			2	17
	11	6	1	79.0	23	15	5	175.0	

Age at Entry, 6 Years.

Years of Insurance.	No. of Entrants, 20.				$40,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	1	1		9.5	2	1		19.5	6
1		1		17.5		2		36	7
2	2	3		15.5	4	3		33.5	8
3		4		10		6		25	9
4	1	1		7.5	5	2		21	10
5				6				15	11
6	2			6	5			15	12
7	1			4	3			10	13
8	2			3	4			7	14
9	1			1	3			3	15
	10	10		80.0	26	14		185.0	

Age at Entry, 7 Years.

Years of Insurance.	No. of Entrants, 24.				$53,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0	1	1		11.5	2	1		26	7
1	1	4		20	2	7		46.5	8
2	1	1	1	16.5	12	2	1	40	9
3	1	3		12.5	1	5		23.5	10
4		3		8.5		4		18	11
5	2			7	5			16	12
6	1			5	3			11	13
7	1			4	2			8	14
8	1			3	1			6	15
9	1	1		1.5	3	2		4	16
	10	13	1	89.5	31	21	1	199.0	

Age at Entry, 8 Years.

Years of Insurance.	No. of Entrants, 22.				$36,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	2	1		10.5	2	1		17.5	8
1	2	3		17.5	2	7		29.5	9
2		3		12.5		3		22.5	10
3	1	2		10	1	4		19	11
4		1		7.5		2		15	12
5				7				14	13
6		1		6.5		1		13.5	14
7				6				13	15
8	1			6	2			13	16
9	2			5	4			11	17
10				3				7	18
11				3				7	19
12				3				7	20
13				3				7	21
14				3				7	22
15		1		2.5		1		6.5	23
16				2				6	24
17	1			2	2			6	25
18				1				4	26
19				1				4	27
20				1				4	28
21				1				4	29
22				1				4	30
23	1			1	4			4	31
	10	12		116.0	17	19		245.5	

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 9 Years.

No. of Entrants, 30. $58,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0				15				29	9
1	1	3		28.5	1	4		56	10
2		7		22.5		5		50.5	11
3	1			19	2			48	12
4	1	1		17.5	1	2		45	13
5	1	1		15.5	1	1		42.5	14
6	1			14	2			41	15
7	1	1		12.5	5	1		38.5	16
8	3	1		10.5	5	3		31.5	17
9	1	1		6.5	2	1		24.5	18
10	1			5	1			22	19
11	2			4	18			21	20
12	1			2	1			3	21
13				1				2	22
14				1				2	23
15	1			1	2			2	24
	15	15		175.5	41	17		458.5	

Age at Entry, 10 Years.

No. of Entrants, 74. $157,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	6	1		36.5	19	1		78	10
1	5	11		61.5	16	21		126.5	11
2	3	6		48	7	19		90.5	12
3	4	6		39	3	15		66.5	13
4	4	3		30.5	2	10		51	14
5	3	2		24	6	1		43.5	15
6	6	1		19.5	13	3		35.5	16
7	2			13	4			21	17
8				11				17	18
9	1			11	1			17	19
10	1			10	1			16	20
11		1		8.5		4		13	21
12				8				11	22
13		2		7		1		10.5	23
14				6				10	24
15				6				10	25
16	2			6	2			10	26
17				4				8	27
18				4				8	28
19				4				8	29
20				4				8	30
21				4				8	31
22	2			4	2			8	32
23				2				6	33
24	2			2	6			6	34
	41	33		373.5	82	75		687.0	

Age at Entry, 11 Years.

No. of Entrants, 78. $148,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	7	4		37	10	8		70	11
1	2	22		56	3	30		115	12
2	3	8		39	6	13		90.5	13
3	3	4		30	6	11		72.5	14
4	2	5		22.5	13	9		56.5	15
5	1	1		17.5	2	3		37.5	16
6	1	2		15	3	5		31.5	17
7	3			13	8			26	18
8	2			10	4			18	19
9		1		7.5		1		13.5	20
10		1		6.5		4		11	21
11				6				9	22
12				6				9	23
13				6				9	24
14	1			6	2			9	25
15		1		4.5		1		6.5	26
16				4				6	27
17	1			4	1			6	28
18	1			3	2			5	29
19				2				3	30
20				2				3	31
21				2				3	32
22				2				3	33
23				2				3	34
24				2				3	35
25	1			2	2			3	36
26				1				1	37
27	1			1	1			1	38
	29	49		309.5	63	85		624.5	

Age at Entry, 12 Years.

No. of Entrants, 155. $296,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	17	5		75	24	7		144.5	12
1	3	23	1	121.5	9	30	1	250	13
2	16	12		100	20	30		210	14
3	6	12		72	10	16		167	15
4	3	7		56.5	5	15		141.5	16
5	7	4		48	6	7		125.5	17
6	14	1		38.5	19	3		114.5	18
7	9	1		23.5	29	1		93.5	19
8	2			14	37			64	20
9	2			12	3			27	21
10	1	1		9.5	5	5		21.5	22
11	1			8	2			14	23
12				7				12	24
13	1	1		6.5	3	1		11.5	25
14		1		4.5		2		7	26

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 12 Years.

Years of Insurance	No. of Entrants, 155.				$296,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
15			1	4			1	6	27
16				3				5	28
17		1		2.5		1		4.5	29
18				2				4	30
19	1			2	3			4	31
20				1				1	32
21				1				1	33
22			1	1			1	1	34
	83	69	3	613.0	175	118	3	1,430.0	

Age at Entry, 13 Years.

Years of Insurance	No. of Entrants, 235.				$458,000 Insured.				Age at Exit
0	14	8	1	113.5	34	17	2	220.5	13
1	16	40	2	192	24	82	1	364	14
2	8	18		145	21	35		280.5	15
3	11	16		120	32	38		223	16
4	16	16		93	20	22		161	17
5	13	10	1	64	12	24	4	118	18
6	11	6	1	42	18	16	1	82	19
7	5	1	2	26.5	10	5	3	52.5	20
8	4	2	1	18	8	4	1	35	21
9	2	1		11.5	4	1		23.5	22
10	2	2		8	2	4		17	23
11			1	5			5	13	24
12				4				8	25
13	1			4	1			8	26
14				3				7	27
15				3				7	28
16				3				7	29
17	1			3	3			7	30
18			1	2			1	4	31
19				1				3	32
20				1				3	33
21				1				3	34
22				1				3	35
23	1			1	3			3	36
	105	120	10	865.5	192	248	18	1,653.0	

Age at Entry, 14 Years.

Years of Insurance	No. of Entrants, 722.				$1,491,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0	28	36	1	343	64	64	2	713.5	14
1	26	117	2	598.5	52	234	2	1,244	15
2	38	60	2	482	62	142	4	1,002	16
3	40	44	1	390	75	125	1	802.5	17
4	45	26	1	314	75	68	2	630	18
5	50	18	1	246	83	64	1	487	19
6	38	9	3	181.5	51	39	1	351.5	20
7	34	10		131	76	20		270	21
8	27	4		90	41	12		178	22
9	18	1	2	60.5	28	4	1	129	23
10	8	2	2	39	25	5	1	95.5	24
11	4		1	28	3		1	67	25
12	2		2	23	4		1	63	26
13	1			19	1			58	27
14	3		1	18	11		1	57	28
15				14				45	29
16	1			14	1			45	30
17				13				44	31
18				13				44	32
19	1			13	4			44	33
20	2			12	3			40	34
21	1		1	10	9		1	37	35
22				8				27	36
23	4			8	14			27	37
24	2			4	9			13	38
25				2				4	39
26	1			2	1			4	40
27				1				3	41
28				1				3	42
29	1			1	3			3	43
	375	327	20	3,079.5	695	777	19	6,531.0	

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **15** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,086.				$2,088,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	46	58	1	514	112	93	2	997.5	15
1	44	207	4	877.5	81	386	7	1,688	16
2	50	88	7	682	82	221	6	1,296.5	17
3	46	59	4	551.5	66	155	6	1,020.5	18
4	67	35	5	454.5	99	101	16	820.5	19
5	62	29	1	350.5	94	82	1	614	20
6	54	26	2	260	92	30	2	463	21
7	41	17	3	182.5	71	22	7	343	22
8	32	1		129.5	70	9		249.5	23
9	30	4		95	77	4		173	24
10	12	1	1	62.5	10	2	1	93	25
11	13	3	1	47.5	13	2	1	80	26
12	2			32	2			65	27
13	3	1		29.5	7	4		61	28
14	2	2		25	6	2		51	29
15	1			22	2			44	30
16	2			21	2			42	31
17	1		1	19	4		1	40	32
18	1			17	2			35	33
19				16				33	34
20				16				33	35
21	1			16	3			33	36
22	1			15	1			30	37
23	4		1	14	11		1	29	38
24	3			9	11			17	39
25	5			6	5			6	40
26				1				1	41
27	1			1	1			1	42
	524	531	31	4,466.5	924	1,113	51	8,359.5	

Age at Entry, **16** Years.

	NUMBER OF ENTRANTS, 1,659.				$3,063,000 INSURED.				
0	118	100	5	779.5	206	174	6	1,444.5	16
1	93	318	7	1,277	189	524	12	2,415	17
2	95	139	7	948.5	193	287	17	1,808.5	18
3	61	93	5	730.5	112	237	11	1,336.5	19
4	83	66	3	585	114	142	4	1,024	20
5	78	51	2	440.5	125	110	1	780	21
6	75	23	2	323.5	114	61	2	568.5	22
7	60	15	1	227.5	87	26	2	409	23
8	44	7		155.5	68	9		302.5	24
9	32	2	1	107	74	5	1	227.5	25

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 16 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,659.				$3,063,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	18	4	1	71	30	8	1	146	26
11	7	1		49.5	17	1		110.5	27
12	5	3		40.5	19	9		88.5	28
13	8		1	34	7		1	65	29
14	1	1	3	24.5	1	2	2	56	30
15	2			20	3			52	31
16	3	1		17.5	12	2		48	32
17	3			14	3			35	33
18	2			11	7			32	34
19				9				25	35
20	3			9	6			25	36
21				6				19	37
22			1	6			1	19	38
23	1			5	5			18	39
24	2			4	11			13	40
25	2			2	2			2	41
	796	824	39	5,897.5	1,405	1,597	61	11,070.0	

Age at Entry, 17 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 2,455.				$4,692,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	137	142	9	1,156.5	275	225	17	2,233.5	17
1	134	445	10	1,944.5	250	813	12	3,768.5	18
2	126	238	10	1,459	220	554	16	2,823	19
3	95	142	9	1,133	168	314	13	2,153	20
4	121	83	10	916.5	184	194	9	1,718	21
5	124	70	7	709	217	157	16	1,349.5	22
6	134	39	6	523.5	212	98	8	989	23
7	94	17	3	355.5	228	30	7	705	24
8	61	8	1	246	120	14	6	448	25
9	64	4	1	178	119	6	1	312	26
10	30		2	111	49		4	189	27
11	11	2	2	78	20	5	1	133.5	28
12	5	2		63	12	2		109	29
13	8	3		55.5	13	3		94.5	30
14	4		2	46	8		4	80	31
15	6		1	40	5		4	68	32
16				33				59	33
17	4	1		32.5	3	1		58.5	34
18	1			28	1			55	35
19	3		1	27	9		1	54	36
20	4		1	23	4		4	44	37
21	2			18	7			36	38
22				16				29	39
23	2		1	16	2		2	29	40
24	6			13	12			25	41

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 17 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 2,455.				$4,692,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
25	3			7	4			13	42
26	1			4	5			9	43
27		1		2.5		2		3	44
28	2			2	2			2	45
	1,182	1,197	76	9,237.0	2,149	2,418	125	17,590.0	

Age at Entry, 18 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 3,973.				$7,466,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	288	291	9	1,841	563	466	14	3,500	18
1	225	832	21	2,969	386	1,413	36	5,716.5	19
2	181	329	21	2,142.5	341	813	42	4,181.5	20
3	175	232	9	1,660	263	463	14	3,160.5	21
4	178	139	7	1,290.5	292	303	16	2,500.5	22
5	174	113	11	979.5	322	253	14	1,914.5	23
6	198	47	5	714.5	362	107	7	1,398.5	24
7	123	30	5	473	279	50	14	951	25
8	111	20	1	320	194	32	2	617	26
9	66	1	2	197.5	129	6	6	402	27
10	39	6	2	126	74	11	8	258.5	28
11	16	4		80	35	11		165.5	29
12	3	1		61.5	5	3		123.5	30
13	5			58	9			117	31
14	9	1	1	52.5	21	2	1	107	32
15	7			42	10			84	33
16	3		2	35	2		7	74	34
17	5		1	30	4		4	65	35
18	1			24	1			57	36
19	5			23	10			56	37
20	2			18	3			46	38
21	1			16	6			43	39
22	2			15	3			37	40
23	2		1	13	6		4	34	41
24	3			10	8			24	42
25	2			7	3			16	43
26	2		1	5	3		4	13	44
27			1	2			4	6	45
28	1			1	2			2	46
	1,827	2,046	100	13,206.5	3,336	3,933	197	25,670.5	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 19 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 6,365.				$11,576,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	387	559	25	2,903	713	875	37	5,350.5	19
1	363	1,451	39	4,668.5	625	2,497	78	8,702.5	20
2	294	526	26	3,278	521	1,024	65	6,239	21
3	277	353	13	2,518.5	435	825	24	4,728.5	22
4	273	191	15	1,956.5	419	456	34	3,629	23
5	298	121	10	1,512.5	478	256	39	2,820	24
6	285	80	20	1,104	498	191	18	2,079.5	25
7	219	48	11	735	353	91	30	1,422.5	26
8	146	16	2	473	304	39	4	974.5	27
9	102	8	1	313	218	18	1	638	28
10	48	7	2	202.5	94	24	3	398	29
11	34	5	1	146.5	65	10	2	284	30
12	10	3	1	107.5	24	7	3	208.5	31
13	11	1	2	94.5	26	4	1	176	32
14	6	4	1	79	12	5	3	144.5	33
15	8	1		69.5	14	2		126	34
16	7	1	3	60.5	9	5	8	108.5	35
17	5			50	5			89	36
18	4			45	8			84	37
19	6		1	41	5		4	76	38
20	6	1	2	33.5	8	4	5	65	39
21	5		1	25	7		3	50	40
22	5	1	1	18.5	4	1	5	39.5	41
23	6			12	20			30	42
24	2			6	4			10	43
25	2			4	2			6	44
26	2			2	4			4	45
	2,811	3,377	177	20,459.0	4,875	6,334	367	38,483.0	

Age at Entry, 20 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 10,110.				$19,252,000 INSURED.				Age at Exit.
0	704	817	38	4,646.5	1,324	1,415	58	8,918.5	20
1	562	2,297	59	7,402.5	1,085	4,232	112	14,339	21
2	464	790	43	5,238	800	1,769	64	10,141.5	22
3	438	589	31	4,041.5	678	1,359	51	7,713.5	23
4	450	368	18	3,094	721	954	45	5,828	24
5	420	191	26	2,346.5	713	421	52	4,374.5	25
6	414	131	18	1,739.5	697	291	33	3,253.5	26
7	361	81	8	1,201.5	671	141	19	2,307.5	27
8	245	27	7	778.5	455	58	21	1,518	28
9	164	22	2	502	297	39	4	993.5	29

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **20** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 10,110.				$19,252,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	77	11	3	319.5	161	22	3	662	30
11	36	6	5	231	66	21	13	476.5	31
12	25	6	3	184	52	12	11	381	32
13	9	1	3	152.5	12	6	3	309	33
14	16	2		139	43	4		289	34
15	27			122	45			244	35
16	14	1		94.5	31	4		197	36
17	15			80	20			164	37
18	2	3		63.5	2	6		141	38
19	10	1		59.5	17	1		135.5	39
20	6			49	13			118	40
21	5	2		42	15	3		103.5	41
22	5	1		35.5	7	1		86.5	42
23	10			30	31			79	43
24	4	2	1	19	11	2	4	47	44
25	6			13	8			31	45
26	4			7	16			23	46
27	2			3	4			7	47
28				1				3	48
29	1			1	3			3	49
	4,496	5,349	265	32,636.5	7,998	10,761	493	62,887.5	

Age at Entry, **21** Years.

	NUMBER OF ENTRANTS, 14,896.				$30,749,000 INSURED.				
0	1,058	1,094	49	6,901	2,018	2,125	62	14,312	21
1	794	3,382	68	11,004	1,628	6,571	115	23,258.5	22
2	672	1,183	70	7,859.5	1,428	2,948	184	16,756	23
3	662	852	42	6,100	1,194	1,994	89	12,673	24
4	697	495	40	4,722.5	1,170	1,224	68	9,781	25
5	622	318	24	3,579	1,254	833	40	7,514.5	26
6	638	176	25	2,686	1,179	428	66	5,590	27
7	503	133	26	1,868.5	1,086	252	54	4,005	28
8	360	48	13	1,249	777	113	31	2,682.5	29
9	265	21	5	841.5	546	61	7	1,787.5	30
10	108	18	2	552	236	44	4	1,182	31
11	79	8	2	429	154	22	8	909	32
12	28	4	6	342	66	11	12	730.5	33
13	40	8	2	302	95	26	1	634	34
14	33	3	3	254.5	56	6	8	522	35
15	28	2	2	216	62	4	3	453	36
16	35	2	1	184	78	2	1	385	37
17	26	2	1	146	41	6	4	302	38
18	15	1	1	117.5	29	3	2	252.5	39
19	23	1	2	100.5	62	1	5	219.5	40

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 21 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 14,896.				$30,749,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	13		1	75	15		4	152	41
21	4		1	61	8		1	133	42
22	10		1	56	23		1	124	43
23	6		1	45	14		1	100	44
24	21			38	44			85	45
25	6			17	14			41	46
26	4	2		10	9	1		26.5	47
27	2			5	8			17	48
28	1			3	3			9	49
29	1	1		1.5	3	3		4.5	50
	6,754	7,754	388	49,766.0	13,300	16,678	771	104,641.5	

Age at Entry, 22 Years.

	NUMBER OF ENTRANTS, 19,955.				$42,124,000 INSURED.				
0	1,263	1,554	57	9,200.5	2,690	2,945	89	19,589.5	22
1	1,019	4,603	114	14,779.5	2,004	9,035	193	31,882.5	23
2	913	1,627	75	10,531.5	1,745	4,058	158	23,139	24
3	812	1,057	58	8,201.5	1,452	2,712	111	17,851	25
4	895	594	48	6,506	1,749	1,482	128	14,191	26
5	827	437	44	5,047.5	1,684	1,020	96	11,063	27
6	869	244	32	3,836	1,830	640	72	8,453	28
7	700	192	24	2,717	1,364	376	55	6,043	29
8	515	73	16	1,860.5	1,240	177	31	4,347.5	30
9	332	28	12	1,279	786	80	28	2,948	31
10	218	31	8	905.5	532	72	19	2,058	32
11	132	16	6	656	282	30	14	1,456	33
12	41	12	4	504	94	33	9	1,128.5	34
13	54	6	7	450	130	12	22	1,003	35
14	47	9		381.5	96	15		837.5	36
15	56	5	3	327.5	113	7	3	730.5	37
16	31	3	3	264.5	73	5	2	608.5	38
17	40	1	2	228.5	74	4	1	529	39
18	40	2	3	185	90	11	5	446.5	40
19	13	1	1	140.5	23	1	5	345.5	41
20	17	2		125	40	11		311.5	42
21	10		1	107	19		3	266	43
22	7	2		95	16	7		240.5	44
23	28	1		86.5	76	4		219	45
24	23	1	1	57.5	56	3	2	139.5	46
25	16			33	32			80	47
26	6		1	17	17		5	48	48
27	4			10	12			26	49
28	2			6	6			14	50
29	1			4	3			8	51
30	3			3	5			5	52
	8,934	10,501	520	68,546.0	18,333	22,740	1,051	150,008.0	

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 23 Years.

Years of Insurance	NUMBER OF ENTRANTS, 24,574.				$54,330,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
0	1,629	1,748	62	11,413	3,459	3,349	122	25,490.5	23
1	1,379	5,393	113	18,438.5	2,926	10,977	253	41,911.5	24
2	1,105	1,897	96	13,301.5	2,135	5,367	257	30,560.5	25
3	1,025	1,319	85	10,492.5	2,008	3,475	176	23,747.5	26
4	1,195	792	55	8,327	2,348	2,172	149	18,740	27
5	1,093	497	52	6,432.5	2,283	1,305	136	14,504.5	28
6	968	325	42	4,876.5	2,001	816	112	11,025	29
7	829	243	17	3,582.5	1,756	495	30	8,256.5	30
8	689	83	29	2,573.5	1,587	206	66	6,120	31
9	450	49	16	1,789.5	1,008	117	53	4,305.5	32
10	280	34	14	1,282	683	103	37	3,134.5	33
11	150	31	12	955.5	362	81	50	2,322.5	34
12	113	13	13	771.5	254	29	44	1,855.5	35
13	62	9	4	634.5	153	14	7	1,536	36
14	79	7	4	560.5	244	11	9	1,363.5	37
15	55	8	2	470	122	17	3	1,096.5	38
16	54	7		405.5	144	11		957.5	39
17	48	2	7	347	91	5	35	805.5	40
18	36	3	4	289.5	59	4	8	675	41
19	33	3	3	246.5	78	6	5	603	42
20	34		3	209	101		7	517	43
21	14	1	3	171.5	30	5	9	406.5	44
22	21	2	4	153	32	3	16	363.5	45
23	33	1		126.5	99	4		312	46
24	33		2	93	85		7	211	47
25	28		1	58	52		5	119	48
26	10			29	18			62	49
27	10			19	31			44	50
28	7			9	11			13	51
29	2			2	2			2	52
	11,464	12,467	643	88,059.5	24,162	28,572	1,596	201,061.0	

Age at Entry, 24 Years.

Years of Insurance	NUMBER OF ENTRANTS, 28,504.				$64,563,000 INSURED.				Age at Exit.
0	1,967	1,895	57	13,304.5	4,230	3,793	103	30,385	24
1	1,546	5,871	135	21,649.5	3,321	12,504	305	50,185	25
2	1,388	2,225	119	15,920.5	3,113	6,330	296	37,142	26
3	1,225	1,400	108	12,601	2,323	3,768	225	28,684	27
4	1,344	890	74	10,123	2,502	2,456	172	23,024	28
5	1,278	599	65	7,960.5	2,645	1,608	150	18,318	29
6	1,246	369	42	6,133.5	2,686	981	103	14,228.5	30
7	1,012	308	27	4,507	2,167	580	59	10,659	31
8	856	124	15	3,252	2,111	292	44	7,997	32
9	580	63	12	2,287.5	1,325	140	33	5,626	33

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **24** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 28,504.				$64,563,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
10	394	57	13	1,635.5	1,006	119	41	4,138.5	*34*
11	192	28	10	1,186	495	84	16	2,990	*35*
12	108	29	11	955.5	304	75	29	2,399.5	*36*
13	89	12	8	816	233	33	29	2,012.5	*37*
14	93	10	13	708	211	10	33	1,729	*38*
15	80	10	5	592	187	23	15	1,468.5	*39*
16	63	6	5	499	191	20	10	1,245	*40*
17	58	5	2	425.5	126	14	7	1,027	*41*
18	47	2	1	362	132	5	3	884.5	*42*
19	46	1	3	312.5	129	4	9	745	*43*
20	27	2	2	262	64	2	10	604	*44*
21	20	1	3	231.5	45	2	10	528	*45*
22	25	1		207.5	54	3		470.5	*46*
23	31	2	4	181	72	7	7	411.5	*47*
24	38		3	145	76		5	329	*48*
25	36		1	104	94		2	248	*49*
26	31	2		66	69	8		148	*50*
27	17		1	34	40		5	75	*51*
28	6		1	16	14		4	30	*52*
29	2			9	5			12	*53*
30	7			7	7			7	*54*
	13,852	13,912	740	106,494.0	29,977	32,861	1,725	247,751.0	

Age at Entry, **25** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 32,680				$76,582,000 INSURED.				
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	2,209	2,120	84	15,280	4,998	4,172	168	36,205	*25*
1	1,840	6,496	137	25,019	4,184	14,301	338	60,093.5	*26*
2	1,585	2,396	136	18,596	3,388	6,966	299	44,938	*27*
3	1,513	1,606	127	14,874	3,182	4,307	276	35,614.5	*28*
4	1,575	964	110	11,949	3,479	2,834	293	28,586	*29*
5	1,562	688	66	9,438	3,422	1,927	218	22,433.5	*30*
6	1,427	427	56	7,252.5	3,066	1,209	157	17,225.5	*31*
7	1,261	341	47	5,385.5	2,900	777	116	13,009.5	*32*
8	972	149	34	3,832.5	2,240	380	88	9,415	*33*
9	618	82	20	2,711	1,747	197	49	6,798.5	*34*
10	443	49	18	2,007.5	1,034	124	56	4,842	*35*
11	239	32	11	1,506	605	66	32	3,657	*36*
12	137	28	14	1,226	348	53	33	2,960.5	*37*
13	116	22	13	1,050	321	35	27	2,535.5	*38*
14	116	19	8	900.5	304	45	33	2,147.5	*39*
15	102	15	9	759.5	281	30	23	1,773	*40*
16	77	7	9	637.5	189	23	24	1,442.5	*41*
17	70	4	3	546	167	17	8	1,209.5	*42*
18	46	4	10	469	67	14	29	1,019	*43*
19	49	3	4	409.5	112	7	13	912.5	*44*

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **25** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 32,680.				$76,582,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	26	1	2	354.5	79	5	7	781.5	45
21	31	1	3	325.5	77	1	5	692.5	46
22	27	1	3	290.5	61	8	4	606	47
23	44	1	3	259.5	142	1	4	536.5	48
24	46	1	1	211.5	90	4	1	388	49
25	66		4	164	72		16	295	50
26	47		4	94	95		17	207	51
27	22		1	43	58		5	95	52
28	15			20	19			32	53
29	2			5	4			13	54
30	3			3	9			9	55
	16,286	15,457	937	125,619.5	36,740	37,503	2,339	300,473.5	

Age at Entry, **26** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 34,138.				$80,236,000 INSURED.				Age at Exit.
0	2,265	2,182	82	15,978	5,018	4,022	182	38,107	26
1	1,864	6,541	175	26,338.5	4,258	14,556	394	63,736	27
2	1,592	2,560	142	19,749	3,498	7,161	348	48,225.5	28
3	1,530	1,647	111	15,911.5	3,244	4,517	277	38,540.5	29
4	1,561	1,111	115	12,891.5	3,538	2,985	280	31,268.5	30
5	1,506	776	94	10,272	3,391	2,194	216	24,861	31
6	1,451	488	70	8,040	3,213	1,353	169	19.480.5	32
7	1,304	396	61	6,077	3,074	931	174	14,956.5	33
8	1,045	181	37	4,423.5	2,523	462	115	11,012	34
9	750	100	32	3,201	1,813	234	78	8,026	35
10	498	66	17	2,336	1,213	194	36	5,921	36
11	318	41	12	1,767.5	755	102	32	4,524	37
12	126	29	16	1,402.5	327	74	29	3,649	38
13	124	22	11	1,235	329	57	25	3,227.5	39
14	170	20	12	1,079	426	63	29	2,813.5	40
15	130	10	2	882	359	18	5	2,318	41
16	72	9	8	740.5	184	31	23	1,929.5	42
17	90	6	3	653	208	13	9	1,700.5	43
18	51	3	3	555.5	126	8	10	1,473	44
19	65	2	2	499	209	7	2	1,329.5	45
20	44	4	2	429	111	14	4	1,108	46
21	31	2	5	380	69	3	17	984.5	47
22	32	2	6	342	75	3	17	895.5	48
23	50	2	4	302	128	10	4	797	49
24	65	3	4	245.5	179	5	12	657.5	50

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **26** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 34,138.				$80,236,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
25	63		3	175	135		18	464	51
26	44	1	1	108.5	123	1	5	310.5	52
27	29	1	1	62.5	76	4	4	180	53
28	17		1	32	46		5	98	54
29	9			14	24			47	55
30	5			5	23			23	56
	16,901	16,205	1,032	136,127.5	38,695	39,022	2,519	332,664.0	

Age at Entry, **27** Years.

Years	NUMBER OF ENTRANTS, 36,221.				$87,030,000 INSURED.				Exit
0	2,274	2,050	81	17,085.5	5,478	4,344	189	41,343	27
1	2,019	6,753	201	28,439.5	4,678	15,314	479	69,362	28
2	1,660	2,877	150	21,404.5	3,687	8,413	367	52,341.5	29
3	1,689	1,672	128	17,320	3,604	4,741	306	41,710.5	30
4	1,703	1,168	126	14,083	3,634	3,360	307	33,750	31
5	1,651	776	90	11,282	3,578	2,224	247	27,017	32
6	1,658	473	63	8,916.5	3,781	1,270	188	21,445	33
7	1,413	431	53	6,743.5	3,225	984	118	16,349	34
8	1,213	201	36	4,961.5	2,883	489	94	12,269.5	35
9	873	120	32	3,552	2,133	300	77	8,898	36
10	559	77	15	2,548.5	1,343	222	50	6,427	37
11	347	45	22	1,913.5	814	118	63	4,864	38
12	150	35	19	1,504.5	371	81	43	3,887.5	39
13	140	33	15	1,301.5	381	86	31	3,390	40
14	161	23	12	1,118.5	410	74	31	2,898	41
15	99	11	8	928.5	239	20	22	2,410	42
16	78	11	7	810.5	196	24	17	2,127	43
17	74	4	7	718	154	5	24	1,899.5	44
18	63	11	5	629.5	179	28	8	1,705	45
19	55	3	3	554.5	158	11	13	1,498.5	46
20	42	5	1	492.5	132	17	2	1,313.5	47
21	41	3	5	445.5	100	5	10	1,168.5	48
22	41	3	4	396.5	104	6	10	1,053	49
23	47	3	4	348.5	111	15	11	928.5	50
24	79	1	2	295.5	174	4	7	797	51
25	71	1	4	213.5	188	3	9	612.5	52
26	58		3	138	164		2	414	53
27	36		4	77	118		17	248	54
28	16		1	37	38		1	113	55
29	9			20	24			74	56
30	9		2	11	44		6	50	57
	18,328	16,790	1,103	148,290.5	42,123	42,158	2,749	362,364.0	

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 28 Years.

Years of Insurance	NUMBER OF ENTRANTS, 41,636.				$93,734,000 INSURED				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
0	2,457	2,052	91	19,792	5,979	4,193	165	44,770.5	28
1	2,078	7,044	178	33,514	5,178	16,133	415	75,330.5	29
2	4,905	2,917	153	26,277.5	3,940	8,513	423	57,414.5	30
3	1,696	1,797	143	18,862.5	3,631	5,175	318	46,207.5	31
4	1,834	1,210	132	15,520	3,972	3,598	258	37,872	32
5	1,705	815	113	12,541.5	3,695	2,382	285	30,652	33
6	1,691	527	97	10,052.5	3,701	1,458	228	24,752	34
7	1,565	478	80	7,762	3,759	1,281	187	19,453.5	35
8	1,330	210	50	5,773	3,299	557	128	14,588.5	36
9	983	129	43	4,223.5	2,392	339	114	10,713.5	37
10	685	78	31	3,094	1,670	212	69	7,932	38
11	407	45	19	2,316.5	986	156	42	6,009	39
12	223	37	21	1,849.5	565	117	49	4,844.5	40
13	164	30	12	1,572	459	89	34	4,127.5	41
14	182	26	14	1,368	488	65	38	3,557.5	42
15	143	15	12	1,151.5	381	33	23	2,982.5	43
16	98	16	10	981	239	34	38	2,545	44
17	100	7	7	861.5	219	34	20	2,234	45
18	102	7	8	747.5	260	18	26	1,969	46
19	65	5	7	631.5	197	4	20	1,672	47
20	48	4	8	555	120	13	26	1,446.5	48
21	40	6	3	494	84	15	5	1,286.5	49
22	45	3	7	446.5	118	7	21	1,186.5	50
23	54	1	6	392.5	146	4	10	1,042	51
24	94	4	4	330	243	7	15	880.5	52
25	74	2	5	229	167	12	20	613	53
26	63	3	1	147.5	187	1	6	419.5	54
27	38		2	82	119		9	226	55
28	24		1	42	66		1	98	56
29	11			17	8			31	57
30	5			6	18			23	58
31				1				5	59
32				1				5	60
33				1				5	61
34				1				5	62
35				1				5	63
36				1				5	64
37				1				5	65
38				1				5	66
39			1	1			5	5	67
	22,909	17,468	1,259	171,642.0	46,286	44,450	2,998	406,925.0	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **29** Years

Years of Insurance.	NUMBER OF ENTRANTS, 38,787.				$96,811,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	2,483	2,017	86	18,385	6,013	3,356	217	46,727.5	29
1	2,119	6,783	181	30,809.5	5,078	15,605	470	79,422.5	30
2	1,829	2,959	147	23,638.5	4,258	8,724	388	61,710	31
3	1,557	1,842	124	19,262	3,940	5,801	326	49,801.5	32
4	1,821	1,228	111	16,046	4,189	3,614	306	40,828	33
5	1,770	884	133	13,058	4,154	3,082	360	32,985	34
6	1,765	592	79	10,417	4,321	1,848	241	26,006	35
7	1,631	476	59	8,039	4,005	1,151	141	19,944.5	36
8	1,399	204	53	6,009	3,398	599	121	14,923.5	37
9	1,081	135	34	4,387.5	2,574	343	69	10,933.5	38
10	734	88	22	3,161	1,779	239	56	7,999.5	39
11	448	55	16	2,333.5	1,133	146	35	5,972	40
12	193	40	17	1,822	444	103	37	4,679.5	41
13	158	22	13	1,581	398	43	35	4,125.5	42
14	184	36	16	1,381	459	86	30	3,628	43
15	130	12	7	1,157	356	33	14	3,079.5	44
16	94	10	9	1,009	229	28	47	2,679	45
17	91	12	8	895	247	23	14	2,377.5	46
18	78	6	6	787	188	5	9	2,102.5	47
19	59	6	6	697	210	18	14	1,894	48
20	50	9	7	624.5	127	14	21	1,654	49
21	44	6	4	560	111	17	14	1,490.5	50
22	44	5	5	506.5	127	17	28	1,348.5	51
23	71	2	8	454	163	6	14	1,182	52
24	90	1	8	373.5	246	4	13	1,000	53
25	109	3	1	273.5	268	4	4	737	54
26	57	1	2	161.5	162	3	8	461.5	55
27	58	2		101	167	1		289.5	56
28	17		1	42	50		3	122	57
29	15	1		23.5	41	4		67	58
30	8			8	24			24	59
	20,187	17,437	1,163	168,003.0	48,859	44,917	3,035	430,195.0	

Age at Entry, **30** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 42,300.				$105,978,000 INSURED.				Age at Exit.
0	2,663	2,184	89	20,058	6,517	4,702	218	50,638	30
1	2,279	7,141	226	33,793.5	5,266	17,016	593	86,033	31
2	1,952	2,998	176	26,219	4,622	9,145	466	67,093.5	32
3	1,855	1,937	163	21,623.5	4,052	5,665	437	54,600.5	33
4	2,125	1,317	150	17,978.5	4,528	4,158	398	45,200	34
5	1,931	995	92	14,547.5	4,774	2,974	271	36,708	35
6	1,862	650	119	11,702	4,748	1,926	293	29,213	36
7	1,802	516	80	9,138	4,358	1,347	241	22,535.5	37
8	1,648	228	45	6,884	3,834	672	136	16,927	38
9	1,264	155	45	4,999.5	2,896	371	131	12,435.5	39

TABLE 1.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **30** Years.								
Years of Insurance.	NUMBER OF ENTRANTS, 42,300.				$105,978,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims	Exposed to Risk.	
					$	$	$	$	
10	805	118	33	3,554	1,868	293	90	9,076.5	40
11	547	60	21	2,627	1,284	150	52	6,897	41
12	215	41	19	2,008.5	544	122	40	5,425	42
13	179	25	14	1,741.5	460	69	43	4,745.5	43
14	182	33	20	1,519.5	486	90	50	4,163	44
15	160	21	12	1,290.5	468	66	37	3,549	45
16	102	10	12	1,103	302	36	52	2,993	46
17	95	12	9	978	263	40	35	2,601	47
18	69	8	7	864	175	19	10	2,273.5	48
19	72	5	7	781.5	174	12	19	2,073	49
20	65	4	4	698	163	22	13	1,863	50
21	49	2	4	626	139	4	9	1,674	51
22	57	2	5	571	138	7	23	1,520.5	52
23	98	4	8	506	243	6	23	1,353	53
24	116	2	6	397	286	11	12	1,078.5	54
25	93	1	6	273.5	241	4	23	773	55
26	73		3	174	219		10	507	56
27	45	1	1	97.5	152	4	1	276	57
28	29	2		50	67	2		120	58
29	13			20	33			52	59
30	7			7	19			19	60
	22,452	18,472	1,376	186,831.0	53,319	48,933	3,726	474,416.5	

Age at Entry, **31** Years.

	NUMBER OF ENTRANTS, 39,923.				$100,042,000 INSURED.				
0	2,450	1,857	90	19,033	6,132	4,048	253	47,997	31
1	2,197	6,386	196	32,333	5,549	14,806	476	82,206	32
2	1,870	2,747	175	25,373.5	4,235	8,270	517	64,643	33
3	1,872	1,851	162	21,029.5	4,198	5,522	447	52,995	34
4	1,813	1,276	149	17,432	4,300	3,858	438	43,660	35
5	1,867	917	125	14,373.5	4,657	2,842	348	35,572	36
6	1,862	622	105	11,612	4,499	1,818	225	28,237	37
7	1,625	532	84	9,068	3,908	1,331	216	21,938.5	38
8	1,578	206	52	6,990	3,696	646	150	16,826	39
9	1,229	132	36	5,191	2,938	338	114	12,488	40
10	1,142	103	28	3,808.5	2,040	273	81	9,130.5	41
11	479	63	24	2,555.5	1,139	155	58	6,795.5	42
12	228	38	21	2,002	591	104	51	5,469	43
13	152	24	26	1,722	540	67	77	4,741.5	44
14	207	27	15	1,518.5	613	75	35	4,053.5	45
15	150	18	15	1,274	374	39	40	3,348.5	46
16	119	18	17	1,091	334	40	50	2,895	47
17	99	8	15	942	234	29	49	2,476.5	48
18	88	7	8	820.5	222	14	22	2,172	49
19	63	8	10	717	165	14	25	1,914	50

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **31** Years.

Years of Insurance.	Number of Entrants, 39,923.				$100,042,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	66	4	4	638	199	8	14	1,713	*51*
21	44	2	11	565	124	4	26	1,494	*52*
22	42	5	10	506.5	111	9	27	1,337.5	*53*
23	85	4	8	450	205	11	32	1,189.5	*54*
24	95		9	355	230		26	947	*55*
25	82	1	2	250.5	201	3	10	689.5	*56*
26	80		2	166	214		5	477	*57*
27	43		3	84	122		5	258	*58*
28	20			38	95			131	*59*
29	11			18	26			36	*60*
30	7			7	10			10	*61*
	21,665	16,856	1,402	181,964.5	51,901	44,324	3,817	457,841.0	

Age at Entry, **32** Years.

Years of Insurance.	Number of Entrants, 40,089.				$101,772,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	2,428	1,868	95	19,110.5	6,080	4,061	244	48,855.5	*32*
1	2,037	6,409	187	32,493.5	5,163	15,640	459	83,567	*33*
2	1,916	2,813	189	25,658.5	4,583	8,484	543	65,883	*34*
3	1,805	1,776	168	21,259	4,000	5,326	434	53,852	*35*
4	1,943	1,316	139	17,740	4,488	3,985	368	44,762.5	*36*
5	1,856	905	118	14,547.5	4,742	2,556	288	36,636	*37*
6	1,860	589	125	11,826.5	4,435	1,742	339	29,457	*38*
7	1,841	486	100	9,304	4,332	1,273	297	23,175.5	*39*
8	1,582	230	61	7,005	4,084	644	156	17,588	*40*
9	1,288	161	48	5,166.5	2,997	410	133	12,821	*41*
10	833	91	30	3,704.5	2,055	224	87	9,374	*42*
11	504	87	23	2,752.5	1,104	159	77	7,040.5	*43*
12	261	38	21	2,163	626	115	56	5,722.5	*44*
13	187	24	19	1,850	456	72	57	4,947	*45*
14	197	28	16	1,618	494	81	36	4,357.5	*46*
15	145	13	14	1,384.5	389	33	37	3,770.5	*47*
16	105	9	16	1,214.5	262	7	44	3,324.5	*48*
17	90	12	18	1,083	237	43	32	2,993.5	*49*
18	82	10	11	964	252	31	33	2,687.5	*50*
19	61	9	8	861.5	159	24	27	2,375	*51*
20	93	3	9	786.5	313	21	36	2,166.5	*52*
21	47	6	12	680	127	11	30	1,801.5	*53*
22	59	3	10	616.5	162	8	20	1,635	*54*
23	65	1	13	545.5	130	4	39	1,447	*55*
24	117	2	3	466	310	6	6	1,273	*56*
25	129	1	3	344.5	299	1	10	953.5	*57*
26	99	2	4	211	279	10	14	639	*58*
27	52	1		106.5	176	3		339.5	*59*
28	25		1	54	84		4	162	*60*
29	11			28	23			74	*61*
30	17			17	51			51	*62*
	21,735	16,893	1,461	185,562.0	52,892	44,974	3,906	473,732.0	

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 33 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 40,498.				$104,474,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	2,349	1,872	108	19,313	6,073	4,107	232	50,183.5	33
1	2,181	6,484	219	32,927	5,438	15,517	584	86,303.5	34
2	1.776	2,845	218	25,862.5	4,580	8,877	604	68,084.5	35
3	1,843	1,856	173	21,518	4,327	5,817	511	55,553.5	36
4	2,000	1,292	161	17,928	4,821	3,966	502	45,824	37
5	1,866	900	132	14,671	4,652	2,815	385	37,110.5	38
6	1,958	577	97	11,934.5	4,900	1,824	264	29,754	39
7	1,920	525	95	9,328.5	4,549	1,252	223	23,052	40
8	1,676	232	73	6,935	4,057	668	197	17,320	41
9	1,282	142	53	4,999	3,117	385	131	12,539.5	42
10	756	108	51	3,539	1,793	261	118	8,968.5	43
11	524	63	26	2,646.5	1,262	157	102	6,848.5	44
12	240	32	19	2,049	522	84	49	5,364	45
13	161	30	25	1,759	433	82	75	4,710	46
14	187	31	15	1,542.5	543	91	55	4,115.5	47
15	130	9	21	1,320.5	359	48	69	3,448	48
16	86	12	13	1,159	223	49	35	2,971.5	49
17	80	10	17	1,049	171	22	39	2,678	50
18	109	5	7	944.5	280	6	41	2,454	51
19	79	4	14	824	216	16	30	2,122	52
20	57	4	9	727	136	11	26	1,862.5	53
21	63	4	7	657	151	19	30	1,685.5	54
22	41	5	14	582.5	99	21	33	1,484.5	55
23	77	2	10	524	180	11	43	1,336.5	56
24	117	6	4	433	269	11	10	1,102.5	57
25	127		6	309	286		14	818	58
26	83	1	5	175.5	223	2	13	517	59
27	38	1	4	86.5	126	4	15	278	60
28	34		2	44	100		2	135	61
29	4			8	13			33	62
30	4			4	20			20	63
	21,848	17,052	1,598	185,800.0	53,919	46,123	4,432	478,677.5	

Age at Entry, 34 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 39,624.				$102,664,000 INSURED.				Age at Exit.
0	2,491	1,669	99	18,977.5	6,401	3,469	262	49,597.5	34
1	2,026	6,097	192	32,316.5	5,508	14,753	497	85,155.5	35
2	1,828	2,895	163	25,602.5	4,435	8,303	494	67,622.5	36
3	1,813	1,791	174	21,268.5	4,285	5,707	481	55,688.5	37
4	1,864	1,258	169	17,757	4,395	3,899	446	46,119.5	38
5	1,976	836	139	14,677	4,849	2,729	402	37,964.5	39
6	1,977	574	109	11,857	5,160	1,696	305	30,501	40
7	1,975	476	85	9,246	4,937	1,224	223	23,576	41
8	1,599	249	62	6,823.5	4,025	683	155	17,462.5	42
9	1,237	144	49	4,966	2,967	422	118	12,730	43

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **34** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 39,624.				$102,664,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	789	98	45	3,559	1,972	290	105	9,289	44
11	458	74	25	2,639	1,079	213	76	6,960.5	45
12	277	36	29	2,101	722	134	107	5,632	46
13	160	27	21	1,763.5	430	88	55	4,692	47
14	169	27	12	1,555.5	425	67	37	4,129.5	48
15	161	19	16	1,351.5	423	39	49	3.614.5	49
16	111	16	13	1,157	298	40	40	3,103	50
17	89	11	14	1,019.5	208	14	48	2,738	51
18	96	10	8	906	263	37	27	2,456.5	52
19	61	7	14	793.5	183	25	42	2,135.5	53
20	49	8	9	711	124	6	21	1,895	54
21	52	6	12	646	147	14	30	1,740	55
22	59	7	6	575.5	152	25	17	1,543.5	56
23	80	5	11	504.5	216	13	37	1,355.5	57
24	119		8	411	287		29	1,096	58
25	86	1	3	283.5	245	1	10	779.5	59
26	87	2	9	193	229	4	14	522	60
27	45		2	96	153		4	277	61
28	29		2	49	84		5	120	62
29	10			18	15			31	63
30	8			8	16			16	64
	21,781	16,343	1,500	183,832.5	54,633	43,895	4,136	480,543.5	

Age at Entry, **35** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 39,759.				$103,782,000 INSURED.				Age at Exit.
0	2,192	1,826	94	18,966.5	5,722	3.955	231	49,913.5	35
1	2,023	6,257	209	32,518.5	5,292	15,063	633	86,342.5	36
2	1,738	2,673	203	25,821.5	4,423	8,570	597	68,601	37
3	1,833	1,761	190	21,663.5	4,324	5,703	519	56,444.5	38
4	1,993	1,252	187	18,134	4,887	4,157	517	46,671.5	39
5	1,967	891	153	14,882.5	5,120	2,684	426	37,847	40
6	2,034	605	126	12,014.5	4,923	1,760	311	30,079	41
7	1,923	520	87	9,292	4,358	1,325	255	23,302.5	42
8	1,577	233	67	6,905.5	3,905	662	178	17,696	43
9	1,254	155	48	5,067.5	3,079	440	120	13,062	44
10	835	97	47	3,639.5	1,899	262	119	9,512	45
11	500	59	27	2,679.5	1,142	184	80	7,271	46
12	249	37	28	2,104.5	724	105	73	5,904.5	47
13	189	23	26	1,797.5	496	94	71	5,008	48
14	183	33	12	1,554.5	509	114	31	4,337	49
15	139	16	19	1,335	351	54	56	3,713	50
16	115	11	15	1,163.5	332	25	40	3,266.5	51
17	79	8	13	1,024	235	14	32	2,875	52
18	69	9	13	923.5	151	14	33	2,594	53
19	72	6	12	834	245	16	43	2,395	54

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OBSERVATIONS ON MALE LIFE.

Years of Insurance.	NUMBER OF ENTRANTS, 39,759.				$103,782,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	54	6	17	744	146	9	51	2,094.5	55
21	50	9	10	665.5	156	24	31	1,881	56
22	32	5	12	598.5	70	19	31	1,672.5	57
23	91	3	10	550.5	195	7	35	1,558.5	58
24	93	1	7	447.5	213	2	20	1,324	59
25	120	1	7	346.5	293	2	17	1,089	60
26	101	4	4	217	423	5	15	775.5	61
27	63		1	110	178		1	335	62
28	28		2	46	90		1	156	63
29	11	1		15.5	39	4		63	64
30	2		2	4	7		15	22	65
	21,609	16,502	1,648	186,066.5	53,927	45,273	4,582	487,806.5	

Age at Entry, **36** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 38,034.				$102,433,000 INSURED.				Age at Exit.
0	2,233	1,632	103	18,201	6,295	3,859	279	49,287	36
1	1,973	5,731	231	31,200.5	5,509	14,327	1,120	84,836.5	37
2	1,734	2,564	206	24,849	4,343	8,256	656	66,916	38
3	1,757	1,675	198	20,789.5	4,279	5,440	505	55,069	39
4	1,850	1,176	174	17,409	4,348	4,151	454	45,489.5	40
5	1,885	841	148	14,376.5	4,849	2,799	496	37,212.5	41
6	1,844	575	110	11,635.5	4,985	1,745	346	29,595.5	42
7	1,845	507	97	9,140.5	4,806	1,279	206	22,752.5	43
8	1,588	260	89	6,815	4,034	792	214	16,705	44
9	1,234	146	39	4,935	2,867	345	110	11,888.5	45
10	888	78	31	3,550	1,754	204	97	8,637	46
11	556	58	36	2,563	1,315	170	115	6,599	47
12	206	40	18	1,922	514	84	56	5,042	48
13	165	29	19	1,663.5	423	99	54	4,380.5	49
14	188	28	17	1,451	496	68	66	3,820	50
15	147	11	12	1,226.5	401	49	28	3,199.5	51
16	94	11	19	1,056.5	236	24	65	2,734	52
17	65	5	14	935.5	138	16	35	2,413	53
18	78	7	8	850.5	185	30	17	2,217	54
19	64	9	12	756.5	217	18	31	1,991	55
20	44	6	7	673	109	23	32	1,722.5	56
21	51	4	11	617	135	10	27	1,565	57
22	38	4	10	551	106	10	41	1,393	58
23	62	3	9	499.5	129	9	30	1,236.5	59
24	107	1	10	426.5	156	3	27	1,071.5	60
25	109	1	12	308.5	279	3	33	885.5	61
26	69	2	4	186	198	20	5	562	62
27	56	1	4	111.5	181	3	19	347.5	63
28	23		2	51	89		6	146	64
29	13			26	13			51	65

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **36** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 38,034.				$102,433,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
30	11			13	35			38	66
31				2				3	67
32			1	2			1	3	68
33				1				2	69
34				1				2	70
35				1				2	71
36				1				2	72
37				1				2	73
38			1	1			2	2	74
	20,977	15,405	1,652	178,799.5	53,424	43,836	5,173	469,821.5	

Age at Entry, **37** Years.

	NUMBER OF ENTRANTS, 35,363.				$94,029,000 INSURED.				
0	2,074	1,462	73	16,950.5	5,468	3,584	178	45,222.5	37
1	1,731	5,294	222	29,107	4,549	13,034	623	78,282	38
2	1,624	2,432	188	23,291	4,090	7,308	594	62,939	39
3	1,572	1,506	171	19,510	3,413	5,215	454	51,993.5	40
4	1,753	1,160	162	16,434	4,357	3,602	462	43,718	41
5	1,782	814	139	13,532	4,684	2,866	426	35,665	42
6	1,690	536	113	10,936	4,644	1,688	319	28,278	43
7	1,687	472	96	8,629	4,185	1,338	264	21,802	44
8	1,538	258	63	6,481	3,881	716	152	16,326	45
9	1,212	129	48	4,686.5	2,792	362	107	11,754	46
10	785	92	35	3,316	1,905	292	82	8,528	47
11	465	66	32	2,417	1,112	160	109	6,315	48
12	221	37	28	1,868.5	593	107	93	4,960.5	49
13	165	28	23	1,587	429	68	59	4,187	50
14	168	25	23	1,372.5	441	74	58	3,628	51
15	117	12	18	1,163	329	29	50	3,077.5	52
16	116	15	14	1,014.5	360	33	33	2,667.5	53
17	87	5	13	874.5	201	28	42	2,244	54
18	64	6	16	769	156	7	42	1,983.5	55
19	60	6	8	683	173	22	24	1,771	56
20	57	4	7	610	164	22	17	1,552	57
21	28	2	8	543	61	6	26	1,357	58
22	39	6	9	503	92	21	33	1,256.5	59
23	60	3	11	450.5	135	8	26	1,117	60
24	93	2	10	377	191	3	42	950.5	61
25	82		5	273	198		15	716	62
26	61		6	186	179		25	503	63
27	58		4	119	164		14	299	64
28	28		1	57	71		5	121	65
29	14		1	28	22		1	45	66
30	12		1	13	21		1	22	67
	19,443	14,372	1,548	167,781.5	49,060	40,593	4,376	443,281.0	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **38** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 34,772.				$93,522,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	2,110	1,427	92	16,672.5	5,262	3,130	240	45,196	38
1	1,746	5,169	224	28,558.5	4,751	12,952	591	78,414	39
2	1,650	2,301	186	22,853.5	4,304	7,316	515	62,938	40
3	1,545	1,608	176	19,063	3,879	5,226	468	51,848	41
4	1,816	1,120	138	15,978	4,492	3,724	468	43,026	42
5	1,542	747	141	13,090.5	4,422	2,400	334	35,004	43
6	1,796	509	125	10,779.5	4,860	1,657	308	28,219.5	44
7	1,743	432	84	8,388	4,499	1,188	242	21,629	45
8	1,591	212	64	6,239	4,062	582	170	16,003	46
9	1,158	143	47	4,406.5	2,829	362	103	11,299	47
10	711	91	38	3,084.5	1,625	243	96	8,064.5	48
11	457	58	31	2,261	1,080	174	91	6,135	49
12	231	34	25	1,727	537	112	53	4,821	50
13	149	24	15	1,442	447	60	45	4,145	51
14	195	23	12	1,254.5	610	64	49	3,591	52
15	101	13	14	1,029.5	295	37	34	2,881.5	53
16	88	13	14	901.5	238	34	35	2,517	54
17	64	7	13	789.5	163	24	43	2,215	55
18	69	7	12	705.5	187	15	39	1,989.5	56
19	47	2	11	620	120	10	29	1,751	57
20	38	4	9	559	108	11	20	1,591.5	58
21	35	3	6	508.5	115	16	24	1,450	59
22	33	3	11	464.5	88	3	31	1,301.5	60
23	45	2	9	418	113	11	39	1,175.5	61
24	102	1	10	362.5	234	4	25	1,016	62
25	85		10	250	237		37	755	63
26	60	1	4	154.5	182	10	7	476	64
27	48		1	90	167		1	282	65
28	22		2	41	74		1	114	66
29	6	1	1	16.5	18	3	3	37.5	67
30	8		1	9	12		3	15	68
	19,291	13,955	1,526	162,717.5	50,010	39,368	4,144	439,901.0	

Age at Entry, **39** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 32,206.				$88,592,000 INSURED.				Age at Exit.
0	1,839	1,307	79	15,449.5	4,986	2,922	258	42,835	39
1	1,636	4,705	201	26,628.5	4,765	11,866	588	74,493	40
2	1,550	2,030	195	21,424	4,133	6,324	579	60,045	41
3	1,521	1,417	190	17,955.5	3,629	4,767	518	49,787.5	42
4	1,547	1,029	172	15,021.5	4,034	3,385	510	41,564.5	43
5	1,624	753	146	12,411.5	4,488	2,360	410	34,148	44
6	1,633	493	108	10,018.5	4,605	1,596	273	27,272	45
7	1,649	412	75	7,825	4,507	1,173	302	21,009.5	46
8	1,513	197	53	5,796.5	3,772	591	139	15,318.5	47
9	1,042	130	47	4,067	2,645	384	118	10,920	48

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **39** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 32,206.				$88,592,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
10	698	80	31	2,873	1,759	182	110	7,874	49
11	403	65	37	2,071.5	996	155	108	5,836.5	50
12	191	26	29	1,586	523	85	89	4,612.5	51
13	139	19	17	1,343.5	433	72	51	3,922	52
14	148	19	15	1,168.5	393	80	46	3,362	53
15	112	10	14	991	356	17	31	2,874.5	54
16	102	7	14	856.5	275	22	50	2,468	55
17	63	4	9	735	192	7	20	2,128.5	56
18	70	4	15	659	171	27	55	1,899.5	57
19	53	4	11	570	141	6	28	1,657	58
20	39	5	8	501.5	93	10	34	1,480	59
21	32	3	12	450.5	91	9	46	1,343.5	60
22	34	2	9	404	166	5	22	1,199.5	61
23	48	2	5	359	107	5	16	1,006.5	62
24	66		9	305	145		30	881	63
25	75	2	5	229	160	1	22	705.5	64
26	68		6	148	227		24	523	65
27	30		3	74	123		13	272	66
28	21	1	3	40.5	61	3	11	134.5	67
29	4		3	16	12		4	61	68
30	9			9	45			45	69
	17,959	12,726	1,521	151,988.0	48,033	36,054	4,505	421,679.0	

Age at Entry, **40** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 33,003.				$90,364,000 INSURED.				Age at Exit.
0	1,883	1,346	90	15,828.5	5,034	3,001	271	43,681.5	40
1	1,712	4,760	222	27,304	4,910	11,946	668	76,085	41
2	1,534	2,114	204	21,933	3,276	7,046	564	61,011	42
3	1,449	1,447	193	18,414.5	3,332	4,951	594	51,172.5	43
4	1,639	1,045	173	15,526.5	3,850	3,490	560	43,026	44
5	1,758	735	121	12,824.5	5,273	2,560	330	35,591	45
6	1,950	478	109	10,339	5,219	1,534	307	27,941	46
7	1,736	386	101	7,848	4,520	1,082	289	21,107	47
8	1,387	208	55	5,714	3,808	650	170	15,432	48
9	1,043	138	45	4,099	2,702	398	135	10,930	49
10	713	85	38	2,899.5	1,811	216	132	7,786	50
11	436	53	30	2,079.5	1,103	136	86	5,667	51
12	191	25	22	1,574.5	491	72	66	4,374	52
13	120	21	12	1,338.5	390	49	44	3,756.5	53
14	160	23	26	1,184.5	486	71	83	3,262.5	54
15	122	9	13	982.5	361	32	36	2,642	55
16	84	8	21	839	259	32	78	2,213	56
17	66	7	17	726.5	155	35	46	1,842.5	57
18	54	2	15	639	126	1	40	1,623.5	58
19	37	5	12	566.5	88	13	26	1,450.5	59

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OBSERVATIONS ON MALE LIFE.

	Age at Entry, **40** Years.								
Years of Insurance.	NUMBER OF ENTRANTS, 33,003.				$90,364,000 INSURED.				**Age at Exit.**
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	37	5	11	512.5	110	13	23	1,323.5	60
21	41	4	14	460	93	17	55	1,175.5	61
22	43	2	13	402	96	4	34	1,017	62
23	54	2	10	344	119	3	32	883.5	63
24	65		6	279	149		20	731	64
25	89		9	208	208		33	562	65
26	45	1	2	109.5	138	3	4	319.5	66
27	30			62	89			176	67
28	19		1	32	48		1	87	68
29	9			12	35			38	69
30	3			3	3			3	70
	18,509	12,909	1,585	155,085.0	48,282	37,355	4,727	426,910.5	

	Age at Entry, **41** Years.								
	NUMBER OF ENTRANTS, 27,981.				$79,495,000 INSURED.				
0	1,711	1,076	84	13,452.5	4,784	2,382	257	38,556.5	41
1	1,399	3,943	202	23,138.5	4,102	10,345	577	66,899.5	42
2	1,275	1,824	178	18,654	3,111	6,085	519	54,005.5	43
3	1,366	1,251	159	15,663.5	3,262	4,196	417	45,235	44
4	1,386	872	133	13,077	3,561	3,106	369	37,905	45
5	1,494	631	123	10,806.5	4,454	2,164	355	31,340	46
6	1,519	434	101	8,657	4,552	1,769	356	24,564.5	47
7	1,412	360	76	6,640	3,937	1,012	216	18,266	48
8	1,298	171	68	4,886.5	3,599	508	162	13,353	49
9	827	98	39	3,386	2,139	306	96	9,185	50
10	602	68	27	2,437	1,594	222	60	6,686	51
11	369	32	23	1,758	937	83	62	4,879.5	52
12	179	23	18	1,338.5	490	86	74	3,796	53
13	122	19	10	1,120.5	373	64	23	3,157	54
14	132	17	14	970.5	427	72	36	2,693	55
15	92	12	11	810	261	48	32	2,170	56
16	64	6	13	698	182	33	48	1,836.5	57
17	38	5	9	615.5	106	22	24	1,579	58
18	50	6	9	563	152	19	22	1,428.5	59
19	47	4	13	499	130	4	25	1,243	60
20	31	2	10	436	68	4	27	1,084	61
21	19	3	9	392.5	56	2	19	986	62
22	39	1	12	362.5	87	4	30	908	63
23	35	2	9	310	79	5	27	786.5	64
24	71	1	10	264.5	108	3	35	676.5	65
25	63		6	183	152		23	532	66
26	37	1	4	113.5	100	3	17	355.5	67
27	34		3	72	113		7	237	68
28	17		1	35	70		4	117	69
29	7		1	17	22		1	43	70

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **41** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 27,931.				$79,495,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
30	6		1	9	18		1	20	71
31				2				1	72
32				2				1	73
33				2				1	74
34		2		1		1		.5	75
	15,741	10,864	1,376	131,373.5	43,026	32,548	3,921	374,527.5	

Age at Entry, **42** Years.

	NUMBER OF ENTRANTS, 26.450.				$76,522,000 INSURED.				
0	1,538	965	92	12,742.5	4,399	2,396	263	37,063	42
1	1,295	3,703	191	22,003.5	3,950	9,795	511	64,566.5	43
2	1,265	1,712	173	17.810	3,388	5,643	510	52,386.5	44
3	1,217	1,141	122	14,945.5	3,123	4,110	339	43,612	45
4	1,372	823	141	12,624.5	3,637	3,009	462	36,590.5	46
5	1,310	608	137	10,396	3,910	2.133	389	29,920.5	47
6	1,413	389	89	8,450.5	4,058	1,398	279	23,856	48
7	1,452	345	58	6,581.5	4,150	1,030	167	18,305	49
8	1,205	176	70	4,811	3,391	506	195	13,220	50
9	929	90	59	3,403	2,405	293	147	9,234.5	51
10	553	71	26	2,334.5	1,394	205	59	6,433.5	52
11	350	47	25	1,696.5	903	168	59	4,794	53
12	156	25	20	1,285.5	465	58	52	3,719	54
13	120	20	15	1,087	352	62	47	3,142	55
14	113	14	13	935	285	43	40	2,690.5	56
15	63	8	12	798	177	18	43	2,335	57
16	57	5	12	716.5	175	26	36	2,093	58
17	55	8	11	641	155	27	44	1,855.5	59
18	49	2	10	570	148	3	46	1,641.5	60
19	39	3	9	508.5	121	8	20	1,442	61
20	18	4	12	457	53	20	31	1,287	62
21	25	4	14	423	83	19	27	1,183.5	63
22	29	3	10	380.5	51	13	36	1,057.5	64
23	57	2	15	339	159	4	58	962	65
24	81	3	13	264.5	226	5	46	740.5	66
25	68		5	169	189		11	466	67
26	44		3	96	102		15	266	68
27	29	2	2	48	101	2	10	148	69
28	11		1	16	27		5	36	70
29	4			4	4			4	71
	14,917	10,173	1,360	126,537.5	41,581	30,994	3,947	365,051.0	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 43 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 24,402.				$69,852,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	1,384	937	90	11,732.5	3,928	2,170	235	33,841	43
1	1,340	3,382	187	20,300	3,731	8,782	548	59,128	44
2	1,244	1,529	172	16,317.5	3,234	5,404	497	47,756	45
3	1,205	1,030	166	13,622	3,171	3,511	503	39,567.5	46
4	1,244	723	146	11,374.5	3,378	2,691	424	32,792.5	47
5	1,266	518	136	9,364	3,589	1,880	434	26,705	48
6	1,259	392	85	7,507	3,444	1,304	293	21,090	49
7	1,329	281	92	5,826.5	3,629	858	289	16,272	50
8	1,012	152	60	4,189	2,835	523	155	11,663.5	51
9	806	88	49	2,997	2,157	264	107	8,280	52
10	466	49	32	2,073.5	1,196	170	91	5,799	53
11	359	32	23	1,535	976	125	77	4,364.5	54
12	134	26	19	1,124	385	68	43	3,215	55
13	105	14	15	951	333	58	48	2,724	56
14	108	8	16	820	352	38	48	2,295	57
15	85	6	13	689	225	12	39	1,870	58
16	43	7	10	584.5	121	30	22	1,585	59
17	41	6	8	525	128	15	27	1,419.5	60
18	40	5	7	470.5	115	16	20	1,249	61
19	23	3	15	419.5	49	8	43	1,102	62
20	24	6	8	377	74	15	22	998.5	63
21	23	3	15	340.5	48	8	48	891	64
22	30		8	301	73		35	791	65
23	50	1	13	262.5	138	3	35	681.5	66
24	62	1	8	198.5	149	1	26	506.5	67
25	31	2	5	127	77	4	17	329	68
26	33	1	3	89.5	85	6	8	230	69
27	24		2	53	69		3	134	70
28	13	2	3	26	40	1	9	61.5	71
29	2	1	1	8.5	6	3	1	10.5	72
30	5			5	2			2	73
	13,790	9,205	1,407	114,210.5	37,737	27,968	4,147	327,354.0	

Age at Entry, 44 Years.

	NUMBER OF ENTRANTS, 22,431.				$64,953,000 INSURED.				
0	1,374	830	73	10,800.5	3,956	1,911	187	31,521	44
1	1,076	3,072	163	18,618	2,999	7,802	432	54,998	45
2	1,083	1,477	186	15,104.5	2,921	4,943	563	45,194.5	46
3	1,135	987	150	12,603.5	2,793	3,582	445	37,448	47
4	1,202	679	119	10,485.5	3,155	2,531	404	31,153.5	48
5	1,124	535	103	8,557.5	3,291	1,676	305	25,491	49
6	1,256	354	102	6,886	3,822	1,250	294	20,432	50
7	1,097	284	72	5,209	3,409	811	207	15,285.5	51
8	933	132	59	3,832	2,765	415	186	11,056.5	52
9	691	78	47	2,735	1,887	271	130	7,762.5	53

OBSERVATIONS ON MALE LIFE.

Age at Entry, 44 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 22,431.				$64,953,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'd. $	Death Claims. $	Exposed to Risk. $	
10	447	56	33	1,930	1,198	179	90	5,520.5	54
11	266	34	28	1,405	686	93	88	4,096.5	55
12	141	28	17	1,080	438	73	52	3,239.5	56
13	106	10	16	903	320	35	58	2,695.5	57
14	101	8	17	772	292	19	46	2,290.5	58
15	77	4	13	648	218	32	43	1,927	59
16	51	7	20	552.5	153	19	56	1,640.5	60
17	33	4	13	476	93	4	54	1,420	61
18	28	4	13	426	76	8	33	1,267	62
19	30	2	10	382	84	24	30	1,142	63
20	20	2	9	340	55	7	49	1,012.5	64
21	26	1	14	309.5	91	3	51	903.5	65
22	15		13	269	37		92	760	66
23	61	3	16	239.5	159	7	42	627.5	67
24	50		11	161	117		25	423	68
25	38		5	100	98		19	281	69
26	25	1	2	56.5	58	3	10	162.5	70
27	19			29	64			93	71
28	7			10	16			29	72
29	1			3	3			13	73
30	2			2	10			10	74
	12,515	8,592	1,324	104,925.5	35,264	25,698	3,991	309,896.5	

Age at Entry, 45 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 21,980.				$63,491,000 INSURED.				Age at Exit.
0	1,241	859	69	10,560.5	3,441	1,947	222	30,772	45
1	1,137	3,043	180	18,289.5	3,319	8,169	537	53,796.5	46
2	1,076	1,361	170	14,770.5	2,724	4,349	455	43,681.5	47
3	1,055	906	158	12,391	3,034	3,277	450	36,689.5	48
4	1,217	657	131	10,396.5	3,136	2,223	418	30,455.5	49
5	1,135	482	96	8,479	3,329	1,624	286	24,978	50
6	1,193	339	104	6,837.5	3,635	1,145	279	19,978.5	51
7	1,101	274	79	5,234	3,312	897	246	15,043.5	52
8	949	113	55	3,860.5	2,732	406	169	10,834	53
9	745	95	42	2,752.5	2,054	330	91	7,565	54
10	490	56	30	1,890	1,266	176	73	5,167	55
11	289	38	16	1,323	773	104	37	3,688	56
12	112	17	13	990.5	336	44	43	2,804	57
13	90	6	20	854	250	35	52	2,385.5	58
14	81	14	23	734	252	35	59	2,048.5	59
15	58	6	20	620	164	14	46	1,713	60
16	38	6	11	536	120	17	38	1,487.5	61
17	45	3	10	482.5	99	10	30	1,316	62
18	44	5	12	423.5	120	6	34	1,179	63
19	15	4	7	363	39	11	13	1,016.5	64

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 45 Years.

Years of Insurance	NUMBER OF ENTRANTS, 21,980.				$63,491,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	19	3	11	337.5	68	4	23	957	65
21	22	4	14	304	54	11	35	858.5	66
22	31	1	11	265.5	68	8	38	760	67
23	32	2	6	222	86	6	50	647	68
24	52		13	183	146		32	508	69
25	42		8	118	104		15	330	70
26	21		2	68	75		13	211	71
27	25		2	45	71		4	123	72
28	11	1	1	17.5	33	3	3	46.5	73
29	2			5	6			9	74
30	3			3	3			3	75
	12,371	8,295	1,314	103,356.5	34,849	24,851	3,791	301.052.0	

Age at Entry, 46 Years.

Years of Insurance	NUMBER OF ENTRANTS, 19,350.				$57,757,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	1,135	711	67	9,319.5	3,449	1,638	155	28,059.5	46
1	959	2,613	156	16,130.5	3,146	6,791	481	49,119.5	47
2	900	1,221	137	13,098.5	2,507	4,299	486	39,947.5	48
3	937	816	122	11,043	2,607	2,843	421	33,383.5	49
4	1,002	573	126	9,289.5	2,825	2,202	385	27,833	50
5	1,053	417	107	7,666.5	3,102	1,554	327	22,745	51
6	1,093	282	89	6,157	3,301	1,082	256	17,998	52
7	1,002	259	78	4,704.5	3,054	807	247	13,496.5	53
8	891	125	54	3,432.5	2,547	432	141	9,576	54
9	711	76	41	2,387	1,837	245	108	6,549.5	55
10	408	51	26	1,571.5	1,106	134	79	4,415	56
11	262	24	11	1,100	638	59	37	3,133.5	57
12	123	18	16	806	352	49	70	2,404.5	58
13	67	10	11	653	210	60	63	1,928	59
14	69	8	17	566	236	22	45	1,614	60
15	62	2	5	475	187	6	22	1,319	61
16	28	5	6	404.5	73	21	30	1,096.5	62
17	43	2	11	367	128	10	12	978	63
18	15	1	15	311.5	62	4	40	831	64
19	19	3	11	279.5	41	6	22	724	65
20	20	1	12	247.5	46	8	35	654	66
21	14	3	8	213.5	50	10	24	564	67
22	30	1	9	189.5	75	3	31	483.5	68
23	27	2	6	149	57	11	15	370.5	69
24	30	2	3	114	68	4	8	291	70
25	26		5	80	58		21	213	71
26	20		3	49	61		7	134	72
27	16		2	26	27		2	66	73
28	4		1	8	21		3	37	74
29	2			3	10			13	75
30	1			1	3			3	76
	10,969	7,226	1,155	90,843.0	31,884	22,300	3,573	269,980.5	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **47** Years.

Years of Insurance.	Number of Entrants, 16,859.				$51,924,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
0	955	634	61	8,112.5	2,704	1,528	178	25,198	47
1	788	2,246	173	14,086	2,394	6,252	546	44,388	48
2	781	1,082	133	11,461	2,185	3,860	369	36,392	49
3	853	703	96	9,654.5	2,231	2,608	317	30,604	50
4	863	479	120	8,114.5	2,450	1,903	358	25,800.5	51
5	953	368	66	6,708	2,829	1,409	214	21,336.5	52
6	1,019	252	77	5,379	3,137	950	210	17,114	53
7	938	206	65	4,054	2,936	644	210	12,970	54
8	765	118	53	2,889	3,341	391	150	9,306.5	55
9	572	64	43	1,980	1,528	160	94	5,540	56
10	341	35	22	1,315.5	937	102	87	3,787	57
11	187	27	14	921.5	454	60	39	2,682	58
12	107	9	17	702.5	275	53	54	2,132.5	59
13	56	8	7	570	168	25	18	1,764.5	60
14	45	8	10	499	119	21	32	1,555.5	61
15	41	1	8	439.5	136	2	17	1,393	62
16	37	3	13	388.5	113	10	55	1,234	63
17	23	3	11	335.5	47	17	20	052.5	64
18	32	3	8	298.5	123	7	119	973.5	65
19	18	2	12	256	116	4	35	726	66
20	13	2	7	224	25	8	23	569	67
21	14	1	9	202.5	48	3	20	515.5	68
22	13	1	7	178.5	37	4	15	444	69
23	20	2	6	157	53	4	17	388	70
24	31		6	130	73		14	316	71
25	27	1	4	92.5	69	3	17	227.5	72
26	28		2	61	66		3	140	73
27	18		4	31	43		7	71	74
28	2		2	9	7		7	21	75
29	2		1	5	2		1	7	76
30	2			2	4			4	77
	9,544	6,258	1,057	79,257.5	28,650	20,028	3,246	248,653.0	

Age at Entry, **48** Years.

Years of Insurance.	Number of Entrants, 15,825.				$47,985,000 Insured.				Age at Exit.
0	905	582	72	7,621.5	2,555	1,775	175	23,105	48
1	785	1,986	152	13,273	2,466	5,366	535	40,797	49
2	810	987	121	10,849.5	2,426	3,274	358	33,476	50
3	758	720	112	9,065	1,888	2,844	362	27,633	51
4	849	431	108	7,619.5	2,342	1,729	373	23,096.5	52
5	838	381	95	6,256.5	2,634	1,499	313	18,767.5	53
6	920	251	80	5,007.5	2,795	879	202	14,631.5	54
7	854	163	48	3,800.5	2,576	540	154	10,925	55
8	801	93	58	2,770.5	2,412	297	203	7,776.5	56
9	540	49	31	1,840.5	1,442	149	80	4,938.5	57

Correction of an error found in the "System and Tables of Life Insurance."

By Levi W. Meech.

SINCE the publication in The Spectator, page 57 (July 31), of the error in the $3\frac{1}{2}$ Per Cent. Tables, so thoroughly examined by Prof. Kendall, this error has been traced to a clerk copying 0 in the antique form, employed by some writers, which was afterwards mistaken for 8. Fortunately the unusual rate of $3\frac{1}{2}$ per cent. is alone affected by it, and only a portion of its tabular values. The D, C, M, R commutation columns and their tabular logarithms are all right, except at the age of 59, where D itself, after the verified computation, was copied as 8,803.10, instead of the true value 8,003.10, as before described.

In the "System and Tables" this erratum is easily rectified in D; and for all the other columns or portions of them, full correction is made in the columnar figures here subjoined. For desirable accuracy these can be cut in strips to be attached over the book figures indicated. To facilitate this object, extra copies have been printed separately. Although the greatest care was used in all the reductions and results of the Thirty Offices' Experience, continued for six years, to insure the highest precision, yet the fundamental Insurance Tables are the most important. Accordingly a reward of $10 in a copy of the "System and Tables" is offered for the discovery of any further error in this class, to be communicated to the actuary in charge for publication. The present offer is limited to six years, and to the Standard Tables 26 to 42, with terminal figures as commonly computed. The table of Anti-logarithms is also included.

AGE.	Table 28. 3½ per ct.	Table 29. 3½ per ct.	Table 32. 3½ per ct.	Table 34. N. Hundreds.	Table 34. S. Hundreds.	Table 34. λ N.	Table 34. λ S.
10	5905	500	32	1,4	058,3	4523	2179
1	4920	440	53	0,5	456,9	4860	9187
2	3897	470	75	2,5	926,3	5108	6014
3	2835	598	99	7,2	463,7	5265	2652
4	1734	827	23	4,5	066,5	5324	9095
15	0594	158	49	4,3	732,0	5283	5335
6	9411	601	75	6,5	457,7	5135	1365
7	8183	166	03	1,1	241,1	4876	7178
8	6912	852	33	7,9	080,0	4501	2764
9	5595	668	64	6,8	18,972,1	4002	8116
20	4230	625	96	7,8	915,2	3376	3224
1	2817	724	31	0,7	907,4	2616	8079
2	1355	974	66	5,6	946,7	1714	2672
3	19.9841	388	50.04	2,2	031,1	0664	6991
4	8274	972	44	0,7	158,8	9458	1027
25	6655	733	85	0,8	328,0	8089	4768
6	4980	689	29	2,5	537,2	6548	8202
7	3250	842	75	5,8	784,6	4826	1318
8	1462	206	23	0,6	068,8	2915	4101
9	9616	797	74	6,8	388,1	0805	6540
30	7713	621	27	4,4	741,3	8484	8618
1	5747	699	84	3,3	126,8	5943	0323
2	3721	8042	43	3,5	543,5	3170	1637
3	1632	3670	55.06	4,9	7,989,9	0152	2544
4	9481	9593	72	7,5	464,9	6877	3028
35	7266	5836	41	1,3	967,3	3330	3068
6	4989	2407	15	6,1	496,0	5.649496	2648
7	2646	9342	92	2,0	049,8	5361	1746
8	0237	6661	74	8,9	627,8	0907	0340
9	7765	4378	61	6,8	228,8	6117	8409
40	5227	2526	52	5,6	852,0	0972	5927
1	2625	1126	49	5,3	496,4	5452	2871
2	15.9957	5.0220	52	5,8	61,1	5.499536	19213
3	7227	5.9825	60	7,3	45,2	73200	84925
4	4432	6.9989	75	279,5	47,9	46421	49978
45	1576	8.0738	97	2,5	68,4	19172	14339
6	8659	9.2118	27	6,2	05,9	91426	77975
7	5682	0.4173	64	0,7	59,6	63152	40850
8	2647	1.6942	70.10	5,9	28,8	34319	02927
9	3.9556	3.0482	1.66	1,7	12,9	04894	64164
50	3.6411	4.4845	3.31	8,2	11,1	74839	24519
1	3.3216	6.0085	5.07	5,4	22,8	44114	83946
2	2.9971	7.6268	6.94	3,1	47,4	12679	42398
3	2.6682	9.3463	8.94	1,5	84,2	80487	6.199820
4	2.3350	1.1744	1.07	0,4	32,7	47491	56158
55	1.9978	3.1199	3.35	29,9	2,2	13637	11353
6	1.6573	5.1894	5.78	19,9	2,3	78868	65341
7	1.3137	7.3939	8.39	10,4	2,4	43126	18055
8	0.9677	9.7418	1.18	01,4	2,0	06342	69420
9	0.6195	2.2457	4.17	92,9	0,5	68446	19359

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **48** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 15,825.				$47,985,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	278	31	22	1,229.5	646	115	68	3,284.5	58
11	227	19	13	904.5	575	68	40	2,479	59
12	83	13	16	648.5	208	37	56	1,811.5	60
13	60	10	10	538	157	31	27	1,513.5	61
14	62	9	8	458.5	173	23	31	1,302.5	62
15	50	3	11	382.5	184	8	40	1,083	63
16	22	3	8	318.5	62	11	23	849.5	64
17	19		8	287	63		19	759	65
18	23	3	9	258.5	65	4	20	675	66
19	18	3	11	223.5	48	5	31	585.5	67
20	9	3	11	191.5	27	8	33	500	68
21	11	1	8	169.5	33	5	18	433.5	69
22	17	1	7	149.5	47	3	23	378.5	70
23	26	1	5	124.5	51	2	8	306	71
24	37		11	93	81		35	246	72
25	13		3	45	28		9	130	73
26	10		4	29	29		11	93	74
27	6			15	14			53	75
28	4			9	21			39	76
29	2			5	11			18	77
30	2			3	2			7	78
31				1				5	79
32				1				5	80
33			1	1			5	5	81
	9,039	5,743	1,043	74,190.0	26,061	18,672	3,252	221,708.5	

Age at Entry, **49** Years.

	NUMBER OF ENTRANTS, 13,873.				$43,119,000 INSURED.				
0	795	456	57	6,708.5	2,405	1,090	181	21,014.5	49
1	686	1,776	128	11,677	2,155	4,937	356	36,974.5	50
2	680	841	125	9,554.5	2,071	2,887	383	30,551.5	51
3	725	614	118	8,022	1,973	2,204	383	25,552	52
4	758	394	90	6,675	1,907	1,594	277	21,297	53
5	854	291	96	5,484.5	2,594	1,993	289	17,319.5	54
6	826	219	86	4,279.5	2,545	851	295	13,014.5	55
7	774	148	63	3,184	2,350	481	173	9,508.5	56
8	588	82	38	2,232	1,874	296	120	6,597	57
9	411	54	38	1,538	1,163	150	120	4,380	58
10	261	30	32	1,047	715	72	81	2,986	59
11	146	18	17	730	419	53	54	2,127.5	60
12	71	7	10	554.5	206	35	36	1,610.5	61
13	45	8	10	466	134	29	26	1,336.5	62
14	51	4	10	405	166	9	25	1,157.5	63

TABLE 1.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 49 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 13,873.				$43,119,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
15	39	2	11	341	107	10	39	957	64
16	32		18	290	114		55	806	65
17	10	1	16	239.5	30	1	40	636.5	66
18	21	2	6	212	67	3	15	564.5	67
19	10	2	11	183	25	3	22	479.5	68
20	17	1	9	160.5	53	11	17	425.5	69
21	9	1	8	133.5	18	1	34	349.5	70
22	14		12	116	30		28	297	71
23	9		6	90	19		12	239	72
24	17		6	75	43		28	208	73
25	15	2	4	51	28	1	9	136.5	74
26	13		3	31	50		6	99	75
27	4		1	15	10		4	43	76
28	5			10	14			29	77
29	2			5	4			15	78
30	1	1	1	2.5	3	3	5	9.5	79
	7,889	4,954	1,030	64,512.5	23,292	16,714	3,113	200,721.5	

Age at Entry, 50 Years.

	NUMBER OF ENTRANTS, 13,650.				$41,776,000 INSURED.				
0	857	491	85	6,579.5	2,445	1,110	280	20,333	50
1	667	1,796	163	11,319	1,949	4,860	581	35,511	51
2	652	836	147	9,173	1,893	3,108	487	28,997	52
3	673	575	132	7,668.5	1,875	1,986	467	24,070	53
4	831	382	104	6,385	2,266	1,447	340	20,011.5	54
5	823	252	93	5,133	2,707	1,032	298	16,166	55
6	768	177	62	4,002.5	2,393	615	209	12,337.5	56
7	784	150	72	3,009	2,541	558	287	9,149	57
8	575	66	44	2,045	1,725	254	131	5,915	58
9	364	36	29	1,375	1,020	100	86	3,882	59
10	236	38	26	945	603	188	59	2,632	60
11	120	14	17	657	320	43	54	1,854.5	61
12	63	5	16	510.5	142	29	57	1,444.5	62
13	52	8	11	425	176	19	19	1,221.5	63
14	53	6	9	355	153	23	25	1,005.5	64
15	34	4	12	288	119	12	28	810	65
16	19	3	6	238.5	56	16	11	649	66
17	18	2	6	211	53	5	22	571.5	67
18	15	1	10	185.5	33	1	55	493.5	68
19	11	1	4	159.5	26	4	13	403	69
20	16	1	10	143.5	49	6	27	359	70
21	6	1	3	116.5	17	3	7	278.5	71
22	13	1	7	106.5	30	1	19	252.5	72
23	10		3	86	21		8	203	73
24	19		5	73	42		8	174	74

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 50 Years.

Years of Insurance	NUMBER OF ENTRANTS, 13,650.				$41,776,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
25	17		4	49	46		10	124	75
26	7	2	3	27	15	2	7	67	76
27	8		1	16	18		1	44	77
28	3		1	7	8		2	25	78
29				3				15	79
30	3			3	15			15	80
	7,717	4,848	1,085	61,295.0	22,756	15,422	3,598	189,014.0	

Age at Entry, 51 Years.

Years of Insurance	NUMBER OF ENTRANTS, 10,458.				$32,807,000 INSURED.				Age at Exit.
0	619	406	56	5,026	1,703	1,067	177	15,870	51
1	546	1,381	135	8,686.5	1,565	3,899	445	27,910.5	52
2	556	607	95	7,011.5	1,642	2,373	362	22,764.5	53
3	513	423	90	5,845.5	1,510	1,641	359	18,753.5	54
4	626	317	83	4,872.5	1,847	1,266	285	15,431	55
5	607	225	83	3,892.5	2,035	918	260	12,207	56
6	591	155	61	3,012.5	1,924	554	215	9,176	57
7	557	127	41	2,219.5	1,683	426	132	6,547	58
8	398	44	49	1,536	1,149	140	141	4,449	59
9	254	31	29	1,051.5	837	159	95	3,009.5	60
10	171	12	25	747	422	33	55	1,981.5	61
11	91	9	22	540.5	234	31	63	1,472.5	62
12	58	5	7	420.5	162	18	12	1,151	63
13	35	5	11	350.5	126	18	29	959	64
14	47	3	6	300.5	134	6	16	792	65
15	31	1	8	245.5	109	8	18	635	66
16	26	1	10	205.5	70	3	17	502.5	67
17	22	3	3	167.5	67	8	7	410	68
18	17	2	7	140	64	7	9	328.5	69
19	7	1	4	114.5	16	2	8	251	70
20	3	1	5	102.5	5	2	9	225	71
21	8	1	4	93.5	6	1	10	209.5	72
22	19		6	81	22		11	193	73
23	12		9	56	28		23	160	74
24	14		2	35	33		1	109	75
25	5		4	19	48		9	75	76
26	1			10	5			18	77
27	2		2	9	4		1	13	78
28	3			5	6			8	79
29	2			2	2			2	80
	5,841	3,760	857	46,799.0	17,458	12,580	2,769	145,613.5	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 52 Years.

Years of Insurance	NUMBER OF ENTRANTS, 9,452.				$29,239,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
0	566	299	42	4,576.5	1,745	694	162	14,272.5	52
1	476	1,222	104	7,934	1,372	3,329	286	24,973.5	53
2	529	551	113	6,467.5	1,507	1,959	325	20,671.5	54
3	497	354	92	5,373	1,375	1,531	303	17,094.5	55
4	566	263	83	4,475.5	1,719	1,025	246	14,138.5	56
5	561	178	62	3,606	1,736	730	199	11,296	57
6	546	100	65	2,844	1,747	405	223	8,793.5	58
7	503	90	75	2,138	1,741	272	181	6,485	59
8	444	44	33	1,493	1,336	208	91	4,323	60
9	266	19	21	984.5	833	62	67	2,761	61
10	166	11	21	682.5	464	45	58	1,807.5	62
11	111	8	18	486	303	17	47	1,254.5	63
12	44	5	10	350.5	75	14	25	889	64
13	28	1	5	293.5	75	6	18	779	65
14	25	2	6	259	48	21	17	672.5	66
15	31	3	7	225.5	72	9	26	592.5	67
16	25	1	7	185.5	92	3	19	488.5	68
17	13	2	6	152	46	5	10	373.5	69
18	2	1	10	131.5	6	2	22	314	70
19	9	1	4	118.5	25	2	4	284	71
20	6		8	105	16		16	254	72
21	10	1	3	90.5	14	3	5	220.5	73
22	5	1	4	76.5	11	2	9	199	74
23	14	1	7	66.5	39	1	20	177.5	75
24	13		3	45	28		8	118	76
25	10	1	6	28.5	23	3	18	80.5	77
26	3		4	12	7		16	38	78
27	3			5	10			15	79
28				2				5	80
29				2				5	81
30	1			2	3			5	82
31				1				2	83
32				1				2	84
33				1				2	85
34			1	1			2	2	86
	5,473	3,159	820	43,215.5	16,468	10,348	2,423	133,389.5	

Age at Entry, 53 Years.

	NUMBER OF ENTRANTS, 8,213.				$25,055,000 INSURED.				
0	537	301	32	3,956	1,306	579	130	12,238	53
1	477	1,061	74	6,812.5	1,336	3,145	218	21,467.5	54
2	412	493	99	5,484.5	1,070	1,963	384	17,359.5	55
3	415	306	93	4,574	1,187	1,222	294	14,313	56
4	432	219	89	3,803.5	1,276	835	273	11,803.5	57

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **53** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 8,213.				$25,055,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
5	457	173	63	3,086.5	1,465	714	172	9,480	58
6	530	101	47	2,429.5	1,555	399	122	7,286.5	59
7	393	82	36	1,761	1,353	255	89	5,282.5	60
8	358	41	39	1,270.5	1,135	137	120	3,644.5	61
9	226	26	20	840	645	74	53	2,284	62
10	117	10	14	576	303	40	26	1,529	63
11	92	7	16	436.5	172	37	46	1,161.5	64
12	38	2	14	324	98	6	44	922	65
13	28	4	10	269	110	14	24	770	66
14	32	1	5	228.5	97	3	11	627.5	67
15	26	1	10	190.5	85	3	24	516.5	68
16	13	2	7	153	53	6	22	403	69
17	9	3	7	130.5	20	3	12	323.5	70
18	15		3	113	45		8	290	71
19	9	2	6	94	34	2	15	236	72
20	5	1	5	77.5	7	4	16	184	73
21	4		6	67	2		24	159	74
22	5		2	57	17		4	133	75
23	4		4	50	5		7	112	76
24	16		6	42	47		3	100	77
25	5		1	20	16		2	50	78
26	4		2	14	7		10	32	79
27	8			8	15			15	80
	4,667	2,836	710	36,868.5	13,461	9,441	2,153	112,723.0	

Age at Entry, **54** Years.

	NUMBER OF ENTRANTS, 7,146.				$22,521,000 INSURED.				
0	495	241	50	3,452.5	1,657	467	160	11,027	54
1	356	898	88	5,911	1,040	2,624	283	18,925	55
2	403	412	87	4,812	1,243	1,541	308	15,519.5	56
3	361	272	81	3,980	964	1,194	302	12,601	57
4	370	197	83	3,303.5	1,097	789	206	10,343.5	58
5	440	141	64	2,681.5	1,447	549	263	8,371.5-	59
6	386	94	50	2,060	1,155	380	141	6,197	60
7	351	61	51	1,546.5	1,237	201	161	4,610.5	61
8	343	28	20	1,100	971	71	79	3,076.5	62
9	203	15	25	715.5	540	56	79	1,963	63
10	117	11	12	474.5	285	49	24	1,291.5	64
11	51	6	12	337	158	22	26	947	65
12	20	1	12	270.5	65	1	18	751.5	66
13	25	3	4	236.5	75	6	11	665	67
14	25	2	11	205	69	4	15	574	68

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **54** Years.

Years of Insurance.	Number of Entrants, 7,146.				$22,521,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
15	24	3	11	166.5	74	17	25	479.5	69
16	8	1	5	129.5	35	1	9	371.5	70
17	10	1	5	115.5	34	1	23	326.5	71
18	3	2	3	99	11	2	7	268	72
19	5		6	92	25		14	249	73
20	8	1	5	80.5	21	3	6	208.5	74
21	3		5	67	8		14	180	75
22	6		6	59	13		13	158	76
23	13	1	1	46.5	29	2	1	131	77
24	7		2	32	15		5	100	78
25	9	2	1	22	25	4	2	78	79
26	4	1	3	10.5	12	3	13	47.5	80
27			1	3			3	21	81
28	1			2	8			18	82
29	1			1	10			10	83
	4,048	2,394	704	32,012.0	12,323	7,987	2,211	99,510.0	

Age at Entry, **55** Years.

	Number of Entrants, 5,963.				$18,939,000 Insured.				
0	384	193	49	2,885	1,190	478	214	9,230.5	55
1	319	770	76	4,952	1,018	2,255	241	15,929.5	56
2	285	348	74	3,998	906	1,264	231	12,911	57
3	325	227	65	3,351.5	1,009	1,079	198	10,602.5	58
4	308	172	59	2,762	926	721	160	8,495.5	59
5	349	111	64	2,253.5	1,114	443	170	6,827.5	60
6	343	61	43	1,754.5	1,172	308	120	5,168	61
7	333	44	31	1,316	958	150	128	3,647	62
8	249	26	23	917	674	98	59	2,437	63
9	193	15	20	624.5	540	47	59	1,631.5	64
10	108	10	7	399	278	23	29	997.5	65
11	75	2	7	278	175	6	14	676	66
12	33	4	5	193	80	15	15	476.5	67
13	13	2	5	152	49	4	16	372	68
14	19	2	4	132	43	5	13	302.5	69
15	10	1	5	107.5	25	2	9	243	70
16	10	4	7	90	20	4	21	206	71
17	7		7	71	21		24	163	72
18	4	1	1	56.5	11	1	1	117.5	73
19	5		4	51	8		6	105	74
20	8		3	42	24		3	91	75
21	2			31	5			64	76
22	1			29	1			59	77
23	2		2	28	4		2	58	78
24	9		4	24	15		9	52	79

OBSERVATIONS ON MALE LIFE.

Age at Entry, 55 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 5,963.				$18,939,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims.	Exposed to Risk.	
					$	$	$	$	
25			1	11			1	28	80
26	7			10	19			27	81
27	2		1	3	6		2	8	82
	3,403	1,993	567	26,522.0	10,291	6,903	1,745	80,926.0	

Age at Entry, 56 Years.

Years of Insurance	NUMBER OF ENTRANTS, 4,978.				$16,256,000 INSURED.				Age at Exit.
0	335	155	38	2,411.5	1,056	409	117	7,923.5	56
1	220	634	77	4,133	686	1,837	288	13,755.5	57
2	231	284	68	3,377	726	999	244	11,363.5	58
3	230	194	64	2,839	829	808	266	9,490	59
4	243	140	69	2,378	857	538	201	7,722	60
5	299	86	59	1,953	1,008	450	160	6,170	61
6	328	48	40	1,528	942	180	160	4,687	62
7	285	43	32	1,114.5	929	127	113	3,431.5	63
8	212	18	22	767	710	77	67	2,287.5	64
9	159	8	14	520	443	20	50	1,462	65
10	74	8	13	339	217	23	41	947.5	66
11	56	2	8	247	130	9	40	673.5	67
12	23	5	11	179.5	76	8	28	495	68
13	20	2	10	142	72	4	25	385	69
14	19	2	8	110	50	4	24	284	70
15	5		1	82	19		3	208	71
16	3		7	76	15		14	186	72
17	6	1	6	65.5	9	1	27	156.5	73
18	4	1	1	52.5	8	1	1	119.5	74
19	2		5	47	2		13	110	75
20	3		3	40	11		7	95	76
21	2	1	4	33.5	5	2	7	76	77
22	3		3	27	8		8	63	78
23	3		1	21	9		1	47	79
24	8		2	17	20		2	37	80
25	1		1	7	3		1	15	81
26	2		1	5	7		1	11	82
27	1			2	2			3	83
28				1				1	84
29	1			1	1			1	85
	2,778	1,632	568	22,516.0	8,850	5,497	1,909	72,206.5	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **57** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 4,212.				$13,878,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	290	126	28	2,043	1,042	296	82	6,791	57
1	199	464	66	3,536	579	1,406	184	11,755	58
2	275	244	54	2,917	795	871	224	9,853.5	59
3	200	139	60	2,396.5	655	635	162	8,081.5	60
4	238	119	57	2,007.5	758	456	250	6,719	61
5	297	53	47	1,626.5	923	265	158	5,350.5	62
6	264	42	35	1,235	974	243	209	4,015.5	63
7	230	38	37	896	801	127	113	2,647.5	64
8	171	12	22	604	548	36	59	1,652	65
9	122	10	13	400	328	32	30	1,011	66
10	63	11	7	254.5	144	27	25	623.5	67
11	42	3	6	177.5	60	6	21	438	68
12	13	2	8	127	44	2	15	353	69
13	11		8	105	33		28	293	70
14	10	1	1	85.5	28	1	1	231.5	71
15	5	1	5	73.5	23	1	10	201.5	72
16	9	2	2	62	40	2	1	167	73
17	6		2	50	18		4	125	74
18	3		1	42	9		1	103	75
19	2		4	38	3		7	93	76
20	2		6	32	9		12	83	77
21	3			24	8			62	78
22		1	4	20.5		3	15	52.5	79
23			1	16			5	36	80
24	8		1	15	13		1	31	81
25		1	1	5.5		3	3	15.5	82
26	2		1	4	7		3	11	83
27	1			1	1			1	84
	2,466	1,269	477	18,794.5	7,843	4,412	1,623	60,797.0	

Age at Entry, **58** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 3,605.				$11,429,000 INSURED.				Age at Exit.
0	243	100	16	1,752.5	715	220	77	5,604.5	58
1	212	375	62	3,058.5	609	1,171	166	9,831.5	59
2	183	167	54	2,513.5	486	675	165	8,133.5	60
3	171	117	59	2,134.5	501	546	225	6,872	61
4	242	72	42	1,810	716	336	125	5,705	62
5	294	58	43	1,461	920	219	143	4,586.5	63
6	228	43	36	1,073.5	681	173	118	3,327.5	64
7	197	31	28	772.5	668	99	90	2,392.5	65
8	156	7	20	528.5	517	28	44	1,571	66
9	100	8	10	345	299	19	38	986.5	67

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **58** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 3,605.				$11,429,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims	Exposed to Risk.	
					$	$	$	$	
10	65	4	12	229	206	10	37	635	68
11	36	1	5	149.5	99	8	12	383	69
12	9	3	8	106.5	34	6	17	265	70
13	10	1	6	87.5	34	1	19	210.5	71
14	13	1	3	70.5	42	1	5	156.5	72
15	3		2	54	3		5	109	73
16	6		3	49	6		6	101	74
17	3		3	40	7		7	89	75
18	2		2	34	5		4	75	76
19	2		5	30	6		7	66	77
20			4	23			10	53	78
21	1		1	19	4		1	43	79
22	1		3	17	3		3	38	80
23	2		2	13	11		4	32	81
24	4		2	9	6		4	17	82
25	1			3	1			7	83
26				2				6	84
27	1			2	3			6	85
28				1				3	86
29	1			1	3			3	87
	2,186	988	431	16,389.5	6,585	3,512	1,332	51,308.5	

Age at Entry, **59** Years.

	NUMBER OF ENTRANTS, 2,933.				$9,413,000 INSURED.				
0	190	110	20	1,411.5	581	252	73	4,580.5	59
1	154	330	76	2,448	504	1,007	250	8,003.5	60
2	144	133	56	1,986.5	476	498	162	6,497	61
3	151	94	42	1,673	492	400	117	5,410	62
4	180	65	38	1,400.5	611	330	145	4,436	63
5	197	41	37	1,129.5	644	175	88	3,427.5	64
6	176	29	31	860.5	589	91	135	2,562.5	65
7	169	17	33	630.5	528	64	60	1,761	66
8	137	7	19	416.5	361	19	38	1,131.5	67
9	59	3	10	255.5	195	14	38	716	68
10	38	1	13	184.5	120	6	29	473	69
11	27	1	14	132.5	63	3	25	319.5	70
12	8	1	6	90.5	34	1	17	229.5	71
13	10	1	7	75.5	32	3	16	176.5	72
14	13	1	2	57.5	41	3	7	125.5	73
15	5	1	1	41.5	8	1	1	75.5	74
16	1			35	6			66	75
17	1	1	3	33.5	2	1	4	59.5	76
18				29				53	77
19	1		5	29	3		4	53	78

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 59 Years.

Years of Insurance.	Number of Entrants, 2,933.				$9,413,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20		1	1	22.5		1	1	45.5	79
21	1	1	2	20.5	7	2	5	43	80
22	2		2	17	5		2	30	81
23	2		4	13	8		4	23	82
24	5		1	7	8		1	11	83
25				1				2	84
26	1			1	2			2	85
	1,672	838	423	13,002.5	5,320	2,871	1,222	40,313.0	

Age at Entry, 60 Years.

Years of Insurance.	Number of Entrants, 2,682.				$8,497,000 Insured.				Age at Exit.
0	179	81	32	1,300.5	619	165	103	4,166	60
1	147	282	55	2,249	456	747	191	7,236.5	61
2	144	147	55	1,832.5	485	516	147	5,958	62
3	152	82	50	1,519	446	345	187	4,895.5	63
4	132	53	49	1,249.5	386	271	138	3,954.5	64
5	165	50	34	1,017	535	167	115	3,211.5	65
6	187	27	27	779.5	562	144	99	2,406	66
7	139	18	20	543	409	55	59	1,645.5	67
8	117	7	10	371.5	402	55	25	1,122.5	68
9	74	6	10	238	202	18	23	659	69
10	39	4	3	149	94	23	7	413.5	70
11	26	1	6	104.5	61	4	11	299	71
12	8	1	5	71.5	26	4	18	223	72
13	3	2	5	57	10	17	16	168.5	73
14	5	1	2	47.5	15	3	3	132.5	74
15	6	2	1	39	12	6	4	110	75
16	2		2	31	7		2	91	76
17	1		3	27	5		11	82	77
18			2	23			5	66	78
19				21				61	79
20	1		1	21	5		5	61	80
21	3			19	8			51	81
22	1		4	16	1		3	43	82
23	1		1	11	12		7	39	83
24			1	9			1	20	84
25	4	1	1	7.5	11	1	1	18.5	85
26			1	2			3	6	86
27				1				3	87
28				1				3	88
29			1	1			3	3	89
	1,536	765	381	11,758.5	4,769	2,541	1,187	37,149.0	

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OBSERVATIONS ON MALE LIFE.

Age at Entry, **61** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,683.				$5,239,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	90	53	20	815	219	117	77	2,561	61
1	74	187	24	1,426.5	207	591	80	4,530.5	62
2	73	68	29	1,201	277	257	89	3,819.5	63
3	121	54	32	1,038	291	266	90	3,192	64
4	128	46	27	835	342	228	125	2,564	65
5	109	35	23	639.5	250	171	77	1,897.5	66
6	118	8	15	486	401	30	40	1,470	67
7	101	15	20	341.5	306	28	67	1,000	68
8	61	5	10	210.5	180	9	35	608.5	69
9	30	3	10	135.5	72	11	37	383.5	70
10	18	1	6	93.5	53	1	12	268.5	71
11	11	2	4	68	58	9	12	198.5	72
12	4	2	1	51	4	6	5	121	73
13	4	1	2	44.5	11	2	1	108	74
14	4		2	38	8		8	95	75
15	1		2	32	1		5	79	76
16	1		2	29	4		1	73	77
17	2	1	5	25.5	5	3	12	66.5	78
18			2	18			12	48	79
19			1	16			3	36	80
20			1	15			3	33	81
21	1	1	1	13.5	2	2	3	29	82
22			1	11			3	23	83
23	1		1	10	4		1	20	84
24	3			8	4			15	85
25	2		1	5	6		2	11	86
26			1	2			2	3	87
27				1				1	88
28				1				1	89
29			1	1			1	1	90
	957	482	244	7,611.5	2,705	1,731	803	23,257.0	

Age at Entry, **62** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,206.				$4,188,000 INSURED.				Age at Exit.
0	89	27	20	589.5	341	71	38	2,058.5	62
1	52	118	33	1,011	213	333	115	3,571.5	63
2	55	42	21	846	185	181	71	2,986.5	64
3	64	48	29	725	157	161	114	2,559.5	65
4	95	25	27	595.5	305	186	79	2,115	66
5	62	16	18	453	239	155	33	1,560.5	67
6	89	6	11	362	330	19	28	1,201.5	68
7	78	13	19	252.5	329	33	55	817.5	69
8	46	4	6	147	131	8	16	413	70
9	28	1	6	92.5	76	14	12	255	71

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, **62** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,206.				$4,188,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	5		2	58	20		3	160	72
11	8	1	4	50.5	23	3	6	135.5	73
12	3	1	1	37.5	5	1	5	104.5	74
13	1		2	33	6		6	94	75
14	1		1	30	3		1	82	76
15	2	1	4	27.5	9	2	9	77	77
16	1		3	21	10		7	58	78
17	1			17	1			41	79
18	1		1	16	5		1	40	80
19	1		2	14	2		3	34	81
20	1			11	4			29	82
21	1			10	3			25	83
22	1		1	9	6		3	22	84
23			4	7			9	13	85
24				3				4	86
25				3				4	87
26	1		1	3	2		1	4	88
27	1			1	1			1	89
	687	303	216	5,425.5	2,406	1,167	615	18,466.5	

Age at Entry, **63** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 957.				$2,897,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	52	24	9	466.5	159	62	24	1,417.5	63
1	47	116	23	814	171	316	60	2,494	64
2	56	52	24	660	192	143	79	2,033.5	65
3	37	37	18	535.5	92	107	74	1,637.5	66
4	64	32	15	446	181	106	42	1,365	67
5	62	15	12	343.5	161	144	48	1,017	68
6	54	10	14	257	172	30	43	721	69
7	47	6	6	181	166	17	16	482.5	70
8	46	2	5	124	99	8	13	288	71
9	15	2	6	71	31	5	14	169.5	72
10	9	1	3	48.5	34	1	5	121.5	73
11	5	1	4	35.5	6	3	6	80.5	74
12	3	1	4	25.5	10	2	2	66	75
13	4	1	1	17.5	22	1	5	52.5	76
14	1		2	12	1		2	25	77
15	1			9	1			22	78
16				8				21	79
17			1	8			5	21	80
18	1		1	7	6		3	16	81
19		1		4.5		3		5.5	82

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 63 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 957.				$2,897.000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20			1	4			1	4	83
21				3				3	84
22				3				3	85
23			1	3			1	3	86
24				2				2	87
25	2			2	2			2	88
	506	301	150	4,091.0	1,506	948	443	12,073.5	

Age at Entry, 64 Years.

	NUMBER OF ENTRANTS, 770.				$2,381,000 INSURED.				
0	56	18	6	376	179	32	19	1,174.5	64
1	35	75	23	652.5	101	189	58	2,056.5	65
2	34	39	13	537.5	105	127	51	1,739.5	66
3	39	33	12	454.5	114	93	49	1,473.5	67
4	50	7	12	383.5	179	64	39	1,232	68
5	63	13	14	311.5	159	99	42	932.5	69
6	50	10	12	223	134	25	47	669.5	70
7	27	4	11	154	102	29	41	461.5	71
8	41	2	10	113	140	3	34	302.5	72
9	16	3	3	59.5	37	7	5	123.5	73
10	11	2	1	38	20	3	1	76.5	74
11			1	25			4	54	75
12	1		2	24	2		6	50	76
13		2	3	20		1	7	41.5	77
14	2		2	16	2		4	34	78
15			1	12			2	28	79
16	2		1	11	1		3	26	80
17				8				22	81
18		1	3	7.5		3	13	20.5	82
19			1	4			3	6	83
20			2	3			2	3	84
21				1				1	85
22				1				1	86
23			1	1			1	1	87
	427	209	134	3,436.5	1,275	675	431	10,530.0	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 65 Years.

No. of Entrants, 592. — $1,726,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
				$	$	$	$	$	
0	46	17	6	287.5	53	22	36	852	65
1	20	66	11	490	37	192	32	1,519	66
2	24	42	12	405	71	110	43	1,299	67
3	27	17	15	339.5	77	79	41	1,090.5	68
4	34	11	10	283.5	97	43	27	911.5	69
5	44	14	13	227	127	123	39	704.5	70
6	31	8	10	159	95	39	27	457.5	71
7	45	6	5	111	111	31	9	300.5	72
8	21		5	58	56		23	165	73
9	12	1	4	31.5	33	9	12	81.5	74
10	3			15	12			32	75
11				12				20	76
12			1	12			1	20	77
13	1		1	11	3		2	19	78
14			2	9			2	14	79
15			1	7			1	12	80
16		1	1	5.5		1	2	10.5	81
17				4				8	82
18				4				8	83
19				4				8	84
20	1		1	4	3		1	8	85
21			1	2			3	4	86
22				1				1	87
23				1				1	88
24				1				1	89
25			1	1			1	1	90
	309	183	100	2,485.5	775	649	302	7,548.5	

Age at Entry, 66 Years.

No. of Entrants, 301. — $858,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	9	11	5	145	37	25	11	416.5	66
1	23	29	8	261.5	5	69	14	750.5	67
2	11	20	11	206	29	58	29	668	68
3	7	17	8	165.5	42	50	32	556	69
4	10	3	8	140.5	44	4	25	455	70
5	21	6	9	118	64	28	16	370	71
6	12	2	5	84	47	8	18	272	72
7	13	3	2	64.5	36	2	4	202	73
8	13	1	2	47.5	32	11	4	155.5	74
9	6	1	2	31.5	20	1	9	113.5	75
10	2		3	23	20		7	84	76
11	2		3	18	20		3	57	77
12			3	13			6	34	78
13			3	10			16	28	79
14				7				12	80
15			3	7			5	12	81
16			1	4			2	7	82
17				3				5	83
18				3				5	84
19		1		2.5		3		3.5	85
20				2				2	86
21		1		2			1	2	87
22				1				1	88
23				1				1	89
24				1				1	90
25				1				1	91
26	1			1	1			1	92
	130	94	77	1,363.5	397	259	202	4,215.5	

Age at Entry, 67 Years.

No. of Entrants, 229. — $597,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	11	8	8	110.5	22	14	45	291.5	67
1	8	22	8	191	12	64	25	484	68
2	4	13	7	157.5	11	22	25	404	69
3	8	11	3	134.5	17	44	9	335	70
4	18	8	3	114	47	12	9	281	71
5	11	6	4	86	25	15	7	211.5	72
6	18	3	4	66.5	66	5	6	169.5	73
7	9	2	2	42	13	2	4	94	74
8	9	3		28.5	39	4		74	75
9	6			18	12			33	76
10	2		1	12	7		1	21	77
11			1	9			1	13	78
12				8				12	79
13			1	8			1	12	80
14				7				11	81
15			1	7			1	11	82
16			1	6			2	10	83
17			1	5			1	8	84
18				4				7	85
19	1			4	4			7	86
20			1	3			1	3	87
21			1	2			1	2	88
22				1				1	89
23				1				1	90
24				1				1	91
25			1	1			1	1	92
	105	76	48	1,027.5	275	182	140	2,498.5	

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 68 Years.

No. of Entrants, 151. — $378,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	6	5	1	73	6	2	1	188	68
1	3	16	2	131	17	24	6	357	69
2	1	6	5	115	5	3	20	320.5	70
3	5	7		102.5	14	13		287.5	71
4	6	6	1	91	19	10	1	262	72
5	16	3	8	79.5	50	7	12	233.5	73
6	11	1	5	53.5	22	6	16	165	74
7	4	2	3	36	15	7	8	120.5	75
8	8		3	28	36		15	94	76
9	3	1	2	16.5	16	2	2	42	77
10	1	1	2	10.5	2	5	5	20.5	78
11		1		6.5		2		10	79
12			1	6			1	9	80
13		1	1	4.5		1	3	7.5	81
14			1	3			1	4	82
15				2				3	83
16				2				3	84
17				2				3	85
18				2				3	86
19				2				3	87
20				2				3	88
21			1	2			2	3	89
22		1		.5		1		.5	90
	64	51	36	771.0	202	83	93	2,142.5	

Age at Entry, 69 Years.

No. of Entrants, 92. — $264,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0			1	46			1	132	69
1	3	6	5	88	8	24	12	251	70
2	1	7	1	73.5	1	34	1	202	71
3	4	5	5	65.5	9	14	6	176	72
4	6	1	2	53.5	17	3	3	152.5	73
5	9	3	2	43.5	36	14	3	124	74
6	8	2	5	30	19	2	10	77	75
7	6		1	16	15		4	47	76
8	1			9	10			28	77
9		2		7			4	16	78
10	2		1	6	2		1	14	79
11	2			3	10			11	80
12				1				1	81
13			1	1			1	1	82
	42	26	24	443.0	127	95	42	1,232.5	

Age at Entry, 70 Years.

No. of Entrants, 58. — $120,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	2	7	1	25.5	4	8	3	56	70
1	1	9	2	43.5	1	11	5	99.5	71
2	1	3	2	34.5	1	9	4	83.5	72
3	3	1	2	29.5	10	5	1	71.5	73
4	4			24	15			58	74
5	3	1	1	19.5	7	1	1	42.5	75
6	5		1	15	10		6	34	76
7			1	9			2	18	77
8	3			8	6			16	78
9	1		1	5	1		1	10	79
10				3				8	80
11				3				8	81
12				3				8	82
13				3				8	83
14		1	1	2.5		1	5	7.5	84
15				1				2	85
16				1				2	86
17				1				2	87
18				1				2	88
19			1	1			2	2	89
	23	22	13	233.0	55	35	30	538.5	

Age at Entry, 71 Years.

No. of Entrants, 31. — $79,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	1			15.5	2			39.5	71
1	1	5	2	27.5	1	8	9	73	72
2	4	2	2	21	1	3	8	57.5	73
3	3		1	14	11		1	47	74
4	1		1	10	1		1	35	75
5	1			8	1			33	76
6		2	1	6		6	5	29	77
7	3	1		3.5	20	1		20.5	78
	14	10	7	105.5	37	18	24	334.5	

Age at Entry, 72 Years.

No. of Entrants, 24. — $59,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	1	1	1	11.5	2	1	1	29	72
1	3	1	1	20.5	7	1	1	54.5	73
2	1		1	15.5	3	1		45.5	74
3			1	13.5			3	40.5	75
4	1	1	1	11.5	5	1	4	34.5	76

TABLE I.

OBSERVATIONS ON MALE LIFE.

Age at Entry, 72 Years.

Years of Insurance.	No. of Entrants, 24.				$59,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
5		1	1	8.5		2	2	24	77
6		1	1	6.5		2	5	20	78
7	1		1	5	1		5	14	79
8	1		1	3	2		1	8	80
9				1				5	81
10				1				5	82
11				1				5	83
12				1				5	84
13	1			1	5			5	85
	9	7	8	100.5	25	11	23	295.0	

Age at Entry, 73 Years.

Years of Insurance.	No. of Entrants, 19.				$44,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	1		1	9.5	3		1	22	73
1		2		16		9		35.5	74
2	2	3		13.5	2	8		27	75
3		1	1	9.5		5	1	18.5	76
4			1	8			1	15	77
5			2	7			1	14	78
6			2	5			2	13	79
7		2		2		6		8	80
8	1			1	5			5	81
	4	8	7	71.5	10	28	6	158.0	

Age at Entry, 74 Years.

Years of Insurance.	No. of Entrants, 11.				$22,000 Insured.				
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	Age at Exit.
0	1	1		5	1	1		10.5	74
1		1		8.5		1		19.5	75
2		1		7.5		1		18.5	76
3				7				18	77
4	3		1	7	6		4	18	78
5				3				8	79
6				3				8	80
7	1	1		2.5	2	5		5.5	81
8				1				1	82
9				1				1	83
10				1				1	84
11				1				1	85
12				1				1	86
13				1				1	87
14	1			1	1			1	88
	6	4	1	50.5	10	8	4	113.0	

Age at Entry, 75 Years.

Years of Insurance.	No. of Entrants, 11.				$19,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0				5.5				9.5	75
1			1	11			2	19	76
2				10				17	77
3	1	2		9	1	1		16.5	78
4				7				15	79
5	4	1		6.5	10	1		14.5	80
6	1			2	3			4	81
7				1				1	82
8				1				1	83
9				1				1	84
10				1				1	85
11				1				1	86
12				1				1	87
13				1				1	88
14				1				1	89
15				1				1	90
16				1				1	91
17				1				1	92
18				1				1	93
19				1				1	94
20			1	1			1	1	95
	6	3	2	65.0	14	2	3	109.5	

Age at Entry, 76 Years.

Years of Insurance.	No. of Entrants, 2.				$3,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0				1				1.5	76
1				2				3	77
2				2				3	78
3				2				3	79
4	1			2	2			3	80
5				1				1	81
6		1		.5		1		.5	82
	1	1		10.5	2	1		15.0	

Age at Entry, 77 Years.

Years of Insurance.	No. of Entrants, 1.				$2,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0				.5				1	77
1				1				2	78
2	1			1	2			2	79
	1			2.5	2			5.0	

TABLE I.

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OBSERVATIONS ON MALE LIFE.

Age at Entry, 78 Years.

Years of Insurance.	No. of Entrants, 4.				$5,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0				2				2.5	78
1		1	1	3.5		1	1	4.5	79
2		1		1.5		1		2.5	80
3				1				2	81
4		1		.5		2		1	82
		3	1	8.5		4	1	12.5	

Age at Entry, 82 Years.

Years of Insurance.	No. of Entrants, 1.				$1,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	1			.5	1			.5	82

Age at Entry, 83, 84, 85, 86, and 87 Years.

No. of Entrants, 0.				$0,000 Insured.			

Ages at Entry, 79 and 80 Years.

No. of Entrants, 0.				$0,000 Insured.			

Age at Entry, 81 Years.

	No. of Entrants, 2.				$2,000 Insured.				
0			1	1			1	1	81
1		1		.5		1		.5	82
		1	1	1.5		1	1	1.5	

Age at Entry, 88 Years.

	No. of Entrants, 1.				$1,000 Insured.				
0				.5				.5	88
1				1				1	89
2				1				1	90
3				1				1	91
4				1				1	92
5		1		1			1	1	93
		1		5.5			1	5.5	

TABLE II.

FEMALE LIFE. SUMMARY (A). OBSERVATIONS CLASSIFIED ACCORDING TO THE AGE AT EXIT OR EXPOSURE.

Age at Exit.	Whole Number of Entrants, 44,795.				88,452 Thousand Dollars Insured.				Age at Exit or Exposure.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0									$0 - \frac{1}{2}$
1				2.5				3	$\frac{1}{2}- 1\frac{1}{2}$
2		1		5.5		1		6.5	$1\frac{1}{2}- 2\frac{1}{2}$
3		1		7		1		8	$2\frac{1}{2}- 3\frac{1}{2}$
4		1		9		1		10	$3\frac{1}{2}- 4\frac{1}{2}$
5	1	2		9.5	2	2		10.5	$4\frac{1}{2}- 5\frac{1}{2}$
6	1	1		8	1	1		8	$5\frac{1}{2}- 6\frac{1}{2}$
7		2		8		2		8	$6\frac{1}{2}- 7\frac{1}{2}$
8		2		10.5		2		10.5	$7\frac{1}{2}- 8\frac{1}{2}$
9	3	2		14.5	7	2		21.5	$8\frac{1}{2}- 9\frac{1}{2}$
10	1	2		22	5	2		34	$9\frac{1}{2}-10\frac{1}{2}$
11	4	5	1	39	9	6	1	56	$10\frac{1}{2}-11\frac{1}{2}$
12	3	2		56.5	16	2		93	$11\frac{1}{2}-12\frac{1}{2}$
13	5	11		74	17	8		124	$12\frac{1}{2}-13\frac{1}{2}$
14	13	15	2	112.5	28	28	3	175	$13\frac{1}{2}-14\frac{1}{2}$
15	17	28		187	30	31		283.5	$14\frac{1}{2}-15\frac{1}{2}$
16	19	48	1	282	22	60	1	426.5	$15\frac{1}{2}-16\frac{1}{2}$
17	39	74	2	387.5	48	95	2	608.5	$16\frac{1}{2}-17\frac{1}{2}$
18	39	107	8	546.5	56	131	15	939	$17\frac{1}{2}-18\frac{1}{2}$
19	60	178	3	791	91	363	5	1,362	$18\frac{1}{2}-19\frac{1}{2}$
20	103	251	7	1,134	162	408	14	1,939.5	$19\frac{1}{2}-20\frac{1}{2}$
21	137	326	20	1,548	211	561	28	2,696.5	$20\frac{1}{2}-21\frac{1}{2}$
22	183	448	16	2,014.5	276	819	28	3,534.5	$21\frac{1}{2}-22\frac{1}{2}$
23	248	500	28	2,544	417	939	63	4,478.5	$22\frac{1}{2}-23\frac{1}{2}$
24	329	610	34	3,044.5	480	1,133	46	5,398	$23\frac{1}{2}-24\frac{1}{2}$
25	365	661	31	3,519	592	1,229	40	6,552	$24\frac{1}{2}-25\frac{1}{2}$
26	403	745	45	4,025.5	621	1,471	92	7,655.5	$25\frac{1}{2}-26\frac{1}{2}$
27	455	719	52	4,489.5	720	1,481	118	8,609.5	$26\frac{1}{2}-27\frac{1}{2}$
28	489	768	47	4,977	773	1,653	88	9,551.5	$27\frac{1}{2}-28\frac{1}{2}$
29	572	845	47	5,417	904	1,838	117	10,436	$28\frac{1}{2}-29\frac{1}{2}$
30	644	826	56	5,791	1,082	1,799	115	11,275	$29\frac{1}{2}-30\frac{1}{2}$
31	631	778	64	6,098	1,080	1,611	149	12,073	$30\frac{1}{2}-31\frac{1}{2}$
32	741	769	64	6,348	1,248	1,771	114	12,770	$31\frac{1}{2}-32\frac{1}{2}$
33	744	816	80	6,524.5	1,192	1,912	157	13,137.5	$32\frac{1}{2}-33\frac{1}{2}$
34	795	811	68	6,623.5	1,363	1,915	143	13,283	$33\frac{1}{2}-34\frac{1}{2}$
35	825	780	74	6,661.5	1,471	1,838	151	13,384	$34\frac{1}{2}-35\frac{1}{2}$
36	783	724	68	6,638.5	1,399	1,809	158	13,250.5	$35\frac{1}{2}-36\frac{1}{2}$
37	822	722	59	6,614	1,554	1,737	128	12,944	$36\frac{1}{2}-37\frac{1}{2}$
38	843	725	66	6,537.5	1,432	1,646	148	12,636	$37\frac{1}{2}-38\frac{1}{2}$
39	807	648	60	6,361	1,393	1,393	113	12,470.5	$38\frac{1}{2}-39\frac{1}{2}$
40	792	632	59	6,241	1,442	1,554	89	12,326	$39\frac{1}{2}-40\frac{1}{2}$
41	821	614	60	6,027.5	1,377	1,555	118	11,823	$40\frac{1}{2}-41\frac{1}{2}$
42	746	588	58	5,634.5	1,323	1,350	127	11,135	$41\frac{1}{2}-42\frac{1}{2}$
43	692	509	62	5,323	1,122	1,246	140	10,540.5	$42\frac{1}{2}-43\frac{1}{2}$
44	716	444	58	5,046	1,340	1,119	145	10,064	$43\frac{1}{2}-44\frac{1}{2}$

TABLE II. 125

FEMALE LIFE. SUMMARY (A). OBSERVATIONS CLASSIFIED ACCORDING TO THE AGE AT EXIT OR EXPOSURE.

Age at Exit.	Whole Number of Entrants, 44,795.				88,452 Thousand Dollars Insured.				Age at Exit or Exposure.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
45	628	407	57	4,770	1,150	1,014	119	9,350	$44\frac{1}{2}$–$45\frac{1}{2}$
46	610	390	44	4,539	1,073	865	79	8,847.5	$45\frac{1}{2}$–$46\frac{1}{2}$
47	586	356	42	4,230.5	1,148	877	83	8,278	$46\frac{1}{2}$–$47\frac{1}{2}$
48	541	321	41	3,979.5	1,033	740	75	7,699	$47\frac{1}{2}$–$48\frac{1}{2}$
49	573	281	36	3,763	1,048	621	89	7,294	$48\frac{1}{2}$–$49\frac{1}{2}$
50	534	279	39	3,445.5	986	615	78	6,714	$49\frac{1}{2}$–$50\frac{1}{2}$
51	435	262	38	3,128.5	782	654	82	6,070	$50\frac{1}{2}$–$51\frac{1}{2}$
52	411	216	37	2,865.5	706	543	67	5,511.5	$51\frac{1}{2}$–$52\frac{1}{2}$
53	420	169	45	2,601.5	765	413	89	5,028	$52\frac{1}{2}$–$53\frac{1}{2}$
54	394	164	26	2,293.5	731	438	65	4,402.5	$53\frac{1}{2}$–$54\frac{1}{2}$
55	344	151	25	2,028	631	398	54	3,845	$54\frac{1}{2}$–$55\frac{1}{2}$
56	293	137	35	1,776.5	517	327	62	3,360	$55\frac{1}{2}$–$56\frac{1}{2}$
57	228	109	34	1,538.5	421	246	80	2,965.5	$56\frac{1}{2}$–$57\frac{1}{2}$
58	241	93	29	1,366	400	215	73	2,662.5	$57\frac{1}{2}$–$58\frac{1}{2}$
59	170	76	18	1,169	338	152	27	2,333.5	$58\frac{1}{2}$–$59\frac{1}{2}$
60	138	63	20	1,039.5	260	153	50	2,050	$59\frac{1}{2}$–$60\frac{1}{2}$
61	170	42	15	935	323	118	39	1,809.5	$60\frac{1}{2}$–$61\frac{1}{2}$
62	105	43	17	779.5	199	115	36	1,484	$61\frac{1}{2}$–$62\frac{1}{2}$
63	111	34	16	676.5	188	74	35	1,280	$62\frac{1}{2}$–$63\frac{1}{2}$
64	87	29	20	573.5	151	54	40	1,115	$63\frac{1}{2}$–$64\frac{1}{2}$
65	64	23	21	486.5	138	38	44	973	$64\frac{1}{2}$–$65\frac{1}{2}$
66	67	31	9	409.5	141	64	17	810	$65\frac{1}{2}$–$66\frac{1}{2}$
67	49	14	15	332	100	30	46	641.5	$66\frac{1}{2}$–$67\frac{1}{2}$
68	47	12	9	264.5	68	23	26	482	$67\frac{1}{2}$–$68\frac{1}{2}$
69	38	12	15	203	62	26	30	380	$68\frac{1}{2}$–$69\frac{1}{2}$
70	23	1	5	149.5	36	1	10	291	$69\frac{1}{2}$–$70\frac{1}{2}$
71	10	4	5	121	14	6	15	245	$70\frac{1}{2}$–$71\frac{1}{2}$
72	10	3	3	103.5	21	9	10	210	$71\frac{1}{2}$–$72\frac{1}{2}$
73	12	3	5	88.5	18	4	13	174	$72\frac{1}{2}$–$73\frac{1}{2}$
74	10	4	2	68.5	23	10	2	136.5	$73\frac{1}{2}$–$74\frac{1}{2}$
75	4	3	9	55	6	8	19	105	$74\frac{1}{2}$–$75\frac{1}{2}$
76	6	1	1	42	7	1	2	78	$75\frac{1}{2}$–$76\frac{1}{2}$
77	3		6	35.5	5		10	70	$76\frac{1}{2}$–$77\frac{1}{2}$
78	2		4	27	3		7	56	$77\frac{1}{2}$–$78\frac{1}{2}$
79	2	2	5	20	6	3	10	44.5	$78\frac{1}{2}$–$79\frac{1}{2}$
80	2			12.5	7			27.5	$79\frac{1}{2}$–$80\frac{1}{2}$
81			6	11.5			10	21.5	$80\frac{1}{2}$–$81\frac{1}{2}$
82			1	6			1	12	$81\frac{1}{2}$–$82\frac{1}{2}$
83			1	5			6	11	$82\frac{1}{2}$–$83\frac{1}{2}$
84	1			4	1			5	$83\frac{1}{2}$–$84\frac{1}{2}$
85				3				4	$84\frac{1}{2}$–$85\frac{1}{2}$
86				3			2	4	$85\frac{1}{2}$–$86\frac{1}{2}$
87				2				2	$86\frac{1}{2}$–$87\frac{1}{2}$
88	1			2	1			2	$87\frac{1}{2}$–$88\frac{1}{2}$
89				1				1	$88\frac{1}{2}$–$89\frac{1}{2}$
90			1	1			1	1	$89\frac{1}{2}$–$90\frac{1}{2}$
	22,261	20,476	2,058	177,710.5	38,813	45,380	4,259	345,038.0	

TABLE II.

FEMALE LIFE. SUMMARY (B). OBSERVATIONS CLASSIFIED ACCORDING TO YEARS OF INSURANCE.

Years of Insurance.	Whole Number of Entrants, 44,795.				88,452 Thousand Dollars Insured.				Duration of Insurance.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'd.	Death Claims.	Exposed to Risk.	
0	2,266	2,040	184	21,377.5	4,057	3,397	397	42,527.5	$0 - \frac{1}{2}$
1	1,986	8,253	391	36,178.5	3,539	15,798	814	72,702	$\frac{1}{2}- 1\frac{1}{2}$
2	2,604	3,410	297	27,970	4,447	8,442	612	56,229	$1\frac{1}{2}- 2\frac{1}{2}$
3	2,193	2,471	252	22,128.5	3,557	6,603	556	43,647.5	$2\frac{1}{2}- 3\frac{1}{2}$
4	2,537	1,611	204	17,642.5	4,283	4,351	450	34,057.5	$3\frac{1}{2}- 4\frac{1}{2}$
5	2,411	1,010	174	13,591	4,063	2,849	369	25,724.5	$4\frac{1}{2}- 5\frac{1}{2}$
6	2,383	580	143	10,211	4,233	1,436	295	19,150	$5\frac{1}{2}- 6\frac{1}{2}$
7	2,080	511	95	7,139.5	3,806	1,193	180	13,307.5	$6\frac{1}{2}- 7\frac{1}{2}$
8	1,490	211	49	4,603.5	2,762	544	98	8,453	$7\frac{1}{2}- 8\frac{1}{2}$
9	793	124	50	2,897	1,362	260	80	5,191	$8\frac{1}{2}- 9\frac{1}{2}$
10	391	77	27	1,953.5	659	176	48	3,531	$9\frac{1}{2}-10\frac{1}{2}$
11	207	50	22	1,472	404	90	43	2,691	$10\frac{1}{2}-11\frac{1}{2}$
12	61	29	16	1,203.5	114	55	26	2,171.5	$11\frac{1}{2}-12\frac{1}{2}$
13	31	14	17	1,105	75	27	42	1,990.5	$12\frac{1}{2}-13\frac{1}{2}$
14	54	17	11	1,041.5	133	28	17	1,846	$13\frac{1}{2}-14\frac{1}{2}$
15	45	12	11	962	89	24	30	1,670	$14\frac{1}{2}-15\frac{1}{2}$
16	37	6	15	897	98	14	42	1,532	$15\frac{1}{2}-16\frac{1}{2}$
17	32	10	11	837	61	21	20	1,374.5	$16\frac{1}{2}-17\frac{1}{2}$
18	26	12	17	783	54	14	21	1,276	$17\frac{1}{2}-18\frac{1}{2}$
19	27	10	11	729	49	20	19	1,184	$18\frac{1}{2}-19\frac{1}{2}$
20	41	4	13	684	72	8	31	1,102	$19\frac{1}{2}-20\frac{1}{2}$
21	45	4	18	626	68	13	28	988.5	$20\frac{1}{2}-21\frac{1}{2}$
22	60	7	5	557.5	98	12	5	880	$21\frac{1}{2}-22\frac{1}{2}$
23	122	2	12	488	175	3	15	769.5	$22\frac{1}{2}-23\frac{1}{2}$
24	147	1	11	352.5	240	2	19	577	$23\frac{1}{2}-24\frac{1}{2}$
25	122		2	194	197		2	317	$24\frac{1}{2}-25\frac{1}{2}$
26	59			70	94			118	$25\frac{1}{2}-26\frac{1}{2}$
27	8			11	20			24	$26\frac{1}{2}-27\frac{1}{2}$
28	2			3	3			4	$27\frac{1}{2}-28\frac{1}{2}$
29				1				1	$28\frac{1}{2}-29\frac{1}{2}$
30	1			1	1			1	$29\frac{1}{2}-30\frac{1}{2}$
	22,261	20,476	2,058	177,710.5	38,813	45,380	4,259	345,038.0	

TABLE II. 127

OBSERVATIONS ON FEMALE LIFE.

Excepting the first Aggregates, the Amounts Insured are stated in THOUSAND DOLLARS in the columns $, where 1 denotes $1000, etc.

Age at Entry, 1 Year.

Years of Insurance	No. of Entrants, 5.				$6,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	$ Existing.	$ Discontinued.	$ Death Claims.	$ Exposed to Risk.	
0				2.5				3	1
1		1		4.5		1		5.5	2
2				4				5	3
3				4				5	4
4	1			4	2			5	5
5		1		2.5		1		2.5	6
6				2				2	7
7				2				2	8
8	1			2	1			2	9
9				1				1	10
10	1			1	1			1	11
	3	2		29.5	4	2		34.0	

Age at Entry, 2 Years.

	No. of Entrants, 2.				$2,000 Insured.				
0				1				1	2
1		1		1.5		1		1.5	3
2				1				1	4
3				1				1	5
4				1				1	6
5		1		.5		1		.5	7
		2		6.0		2		6.0	

Age at Entry, 3 Years.

	No. of Entrants, 3.				$3,000 Insured.				
0				1.5				1.5	3
1				3				3	4
2		1		2.5		1		2.5	5
3	1			2	1			2	6
4				1				1	7
5		1		.5		1		.5	8
	1	2		10.5	1	2		10.5	

Age at Entry, 4 Years.

Years of Insurance	No. of Entrants, 3.				$3,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	$ Existing.	$ Discontinued.	$ Death Claims.	$ Exposed to Risk.	
0		1		1		1		1	4
1		1		1.5		1		1.5	5
2				1				1	6
3				1				1	7
4				1				1	8
5		1		.5		1		.5	9
		3		6.0		3		6.0	

Age at Entry, 5 Years.

	No. of Entrants, 1.				$1,000 Insured.				
0				.5				.5	5
1				1				1	6
2		1		.5		1		.5	7
		1		2.0		1		2.0	

Age at Entry, 6 Years.

	No. of Entrants, 1.				$1,000 Insured.				
0				.5				.5	6
1				1				1	7
2				1				1	8
3				1				1	9
4				1				1	10
5				1				1	11
6				1				1	12
7				1				1	13
8				1				1	14
9	1			.5		1		.5	15
	1			9.0		1		9.0	

Age at Entry, 7 Years.

	No. of Entrants, 4.				$4,000 Insured.				
0				2				2	7
1		1		3.5		1		3.5	8
2				3				3	9
3		1		2.5		1		2.5	10
4				2				2	11

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 7 Years.

Years of Insurance	No. of Entrants, 4. Existing	Discontinued	Died	Exposed to Risk	$4,000 Insured. Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
5	1			2	1			2	12
6				1				1	13
7		1		.5		1		.5	14
	1	3		16.5	1	3		16.5	

Age at Entry, 8 Years.

Years of Insurance	No. of Entrants, 5. Existing	Discontinued	Died	Exposed to Risk	$5,000 Insured. Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0				2.5				2.5	8
1	1			5	1			5	9
2				4				4	10
3		2		3		2		3	11
4				2				2	12
5	1			2	1			2	13
6				1				1	14
7				1				1	15
8				1				1	16
9				1				1	17
10				1				1	18
11				1				1	19
12				1				1	20
13				1				1	21
14				1				1	22
15				1				1	23
16	1			1	1			1	24
	3	2		29.5	3	2		29.5	

Age at Entry, 9 Years.

Years of Insurance	No. of Entrants, 7. Existing	Discontinued	Died	Exposed to Risk	$21,000 Insured. Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	1	1		3	5	1		10	9
1	1	1		4.5	5	1		14.5	10
2				3				9	11
3				3				9	12
4				3				9	13
5	1	1		2.5	2	5		6.5	14
6				1				2	15
7				1				2	16
8				1				2	17
9				1				2	18
10				1				2	19
11				1				2	20
12				1				2	21
13				1				2	22
14				1				2	23
15				1				2	24
16				1				2	25
17				1				2	26
18	1			1	2			2	27
	4	3		32.0	14	7		84.0	

Age at Entry, 10 Years.

Years of Insurance	No. of Entrants, 18 Existing	Discontinued	Died	Exposed to Risk	$22,000 Insured. Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0				9				11	10
1	1	2	1	17	2	3	1	20.5	11
2		1		13.5		1		15.5	12
3				13				15	13
4	1	1		12.5	1	1		14.5	14
5				11				13	15
6		2		10		3		11.5	16
7		3		7.5		2		9	17
8				6				8	18
9	1			6	1			8	19
10				5				7	20
11	1	1		4.5	1	1		6.5	21
12				3				5	22
13				3				5	23
14				3				5	24
15		1		2.5		1		4.5	25
16				2				4	26
17				2				4	27
18	2			2	4			4	28
	6	11	1	132.5	9	12	1	171.0	

Age at Entry, 11 Years.

Years of Insurance	No. of Entrants, 25. Existing	Discontinued	Died	Exposed to Risk	$40,000 Insured. Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	2	1		12	6	1		19.5	11
1	1	1		21.5	5	1		32.5	12
2	1	7		16.5	5	5		24.5	13
3	2	3	1	10.5	2	4	2	15	14
4	1			6	1			9	15

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 11 Years.

Years of Insurance	No. of Entrants, 25.				$40,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
5				5				8	16
6	1			5	2			8	17
7				4				6	18
8				4				6	19
9				4				6	20
10				4				6	21
11		2		3		4		4	22
12				2				2	23
13				2				2	24
14		1		1.5		1		1.5	25
15				1				1	26
16				1				1	27
17				1				1	28
18				1				1	29
19				1				1	30
20				1				1	31
21	1			1	1			1	32
	9	15	1	108.0	22	16	2	157.0	

Age at Entry, 12 Years.

Years of Insurance	No. of Entrants, 27.				$62,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0	1			13.5	10			31	12
1	2	4		24	10	3		50.5	13
2	2	3	1	18.5	3	10	1	34	14
3	1	2		13	1	5		22.5	15
4	1			11	1			19	16
5	3			10	3			18	17
6	1	1		6.5	1	1		14.5	18
7		2		4		6		10	19
8				3				7	20
9				3				7	21
10				3				7	22
11				3				7	23
12				3				7	24
13	1			3	5			7	25
14				2				2	26
15				2				2	27
16				2				2	28
17				2				2	29
18				2				2	30
19				2				2	31
20				2				2	32
21	1			2	1			2	33
22				1				1	34
23	1			1	1			1	35
	14	12	1	136.5	36	25	1	259.5	

Age at Entry, 13 Years.

Years of Insurance	No. of Entrants, 27.				$42,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0	1			13.5	1			21	13
1	3	3		24.5	12	4		39	14
2	2	3		18.5	2	8		21	15
3	1	2		14	1	1		14.5	16
4	1			12	2			13	17
5	2	2		10	3	1		10.5	18
6	1			7	2			7	19
7	2			6	2			5	20
8	2			4	1			3	21
9				2				2	22
10				2				2	23
11				2				2	24
12				2				2	25
13				2				2	26
14				2				2	27
15				2				2	28
16				2				2	29
17				2				2	30
18				2				2	31
19				2				2	32
20				2				2	33
21				2				2	34
22				2				2	35
23				2				2	36
24				2				2	37
25	1			2	1			2	38
26				1				1	39
27				1				1	40
28	1			1	1			1	41
	17	10		146.5	28	14		171.0	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 14 Years.

No. of Entrants, 86. — $130,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	4	3		41.5	8	3		63.5	14
1	7	17		70.5	13	13		112.5	15
2	2	7	1	51.5	3	17	1	84.5	16
3	4	7	1	41.5	2	9	1	67.5	17
4	2	3		31.5	2	5		57.5	18
5	2	4		26	2	11		47.5	19
6	3	3		20.5	7	2		39	20
7	3	3		14.5	4	2		30	21
8	1	2		9	2	2		24	22
9	2	1		6.5	15	2		20	23
10				4				4	24
11	1			4	1			4	25
12		1		2.5		1		2.5	26
13	1			2	1			2	27
14	1			1	1			1	28
	33	51	2	326.5	61	67	2	559.5	

Age at Entry, 15 Years.

No. of Entrants, 136. — $208,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
25				1				4	40
26	1			1	4			4	41
	54	78	4	520.0	95	104	9	995.0	

Age at Entry, 16 Years.

No. of Entrants, 164. — $229,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	9	4		80	11	6		111.5	16
1	6	41	1	130.5	7	50	1	187	17
2	11	13	1	96.5	13	18	1	145	18
3	1	6		75	1	11		116.5	19
4	6	8		67	12	19		100.5	20
5	5	4		55	4	8		75	21
6	13	3		46.5	15	7		63.5	22
7	5	2		31	13	2		44	23
8	9		1	25	7		1	30	24
9	5	2		14	1	2		21	25
10	2			8	8			19	26
11	1			6	5			11	27
12				5				6	28
13				5				6	29
14	3			5	2			6	30
15				2				4	31
16				2				4	32
17				2				4	33
18				2				4	34
19			1	2			1	4	35
20				1				3	36
21				1				3	37
22				1				3	38
23				1				3	39
24	1			1	3			3	40
	77	83	4	664.5	102	123	4	977.0	

Age at Entry, 15 Years.

No. of Entrants, 136. — $208,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	6	5		65.5	13	4		102	15
1	6	33		108.5	6	33		174.5	16
2	8	11		80.5	16	18		143	17
3	1	6	2	64	1	13	7	111.5	18
4	5	11		52.5	11	19		87.5	19
5	5	4		40	6	4		65	20
6	7	2	2	32	12	2	2	56	21
7	5	5		19.5	5	10		36	22
8	5			12	6			26	23
9	3			7	5			20	24
10		1		3.5		1		14.5	25
11				3				14	26
12				3				14	27
13				3				14	28
14				3				14	29
15	1			3	5			14	30
16				2				9	31
17				2				9	32
18				2				9	33
19				2				9	34
20				2				9	35
21				2				9	36
22				2				9	37
23				2				9	38
24	1			2	5			9	39

Age at Entry, 17 Years.

No. of Entrants, 209. — $336,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	16	12		98.5	16	16		160	17
1	6	51	2	155.5	8	61	3	273.5	18
2	9	11		116.5	16	25		219.5	19
3	4	13	1	95.5	4	32	5	175	20
4	7	6	2	81	12	15	1	142.5	21

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 17 Years.

No. of Entrants, 209. — $336,000 Insured.

Years of Insurance.	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	Age at Exit.
5	8	9		64.5	14	18		113	22
6	17	5		49.5	33	7		86.5	23
7	9	2	1	29	15	1	2	49.5	24
8	6	2		17	9	2		31	25
9	5			10	12			21	26
10		1		4.5		1		9	27
11				4				8	28
12				4				8	29
13				4				8	30
14				4				8	31
15				4				8	32
16				4				8	33
17				4				8	34
18		1		4			5	8	35
19				3				3	36
20				3				3	37
21				3				3	38
22	1			3	1			3	39
23	1			2	1			2	40
24	1			1	1			1	41
	90	112	7	768.5	142	178	16	1,359.5	

Age at Entry, 18 Years.

No. of Entrants, 372. — $651,000 Insured.

Years of Insurance.	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	Age at Exit.
20				5				8	38
21				5				8	39
22	1			5	4			8	40
23	2			4	2			4	41
24	1			2	1			2	42
25	1			1	1			1	43
	118	241	13	1,120.5	180	449	22	1,941.0	

Age at Entry, 19 Years.

No. of Entrants, 496. — $831,000 Insured.

Years of Insurance.	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	Age at Exit.
0	30	35	2	230.5	47	61	4	385	19
1	20	115	3	371.5	38	176	6	631	20
2	17	61	1	260.5	23	133	3	432.5	21
3	18	44	1	190	22	87	1	296.5	22
4	19	13		142.5	30	47		206.5	23
5	27	8		113	27	14		146	24
6	26	7		78.5	33	11		106.5	25
7	11	6		46	16	7		64.5	26
8	9	3		30.5	11	3		43.5	27
9	7	1		19.5	8	1		30.5	28
10	1	3		10.5	1	4		20	29
11				8				17	30
12				8				17	31
13	1	1		7.5	5	1		16.5	32
14				6				11	33
15		1		6			3	11	34
16				5				8	35
17				5				8	36
18	1			5	1			8	37
19				4				7	38
20	1			4	2			7	39
21				3				5	40
22		1		2.5		2		4	41
23			1	2			1	3	42
24	1			1	2			2	43
	189	298	9	1,560.0	266	547	18	2,487.0	

Age at Entry, 18 Years.

No. of Entrants, 372 — $651,000 Insured.

Years of Insurance.	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	Age at Exit.
0	16	31	3	170.5	28	32	4	309.5	18
1	11	109	1	267.5	11	230	1	472	19
2	21	40		181	27	72		309	20
3	12	26	3	127	18	57	7	217.5	21
4	8	12	1	93	16	16	1	156	22
5	11	11	1	72.5	12	23	2	119.5	23
6	16	5	2	52.5	21	6	1	91	24
7	8	4		30	25	4		64	25
8	1	2		19	1	8		33	26
9	4	1		16.5	5	1		27.5	27
10	2			12	4			22	28
11	2		1	10	3		5	18	29
12				7				10	30
13				7				10	31
14	1			7	1			10	32
15			1	6			1	9	33
16				5				8	34
17				5				8	35
18				5				8	36
19				5				8	37

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

	Age at Entry, **20** Years.										Age at Entry, **21** Years.								
Years of Insurance.	No. of Entrants, 745.				$1,287,000 Insured.				Age at Exit.	Years of Insurance.	No. of Entrants, 880.				$1,548,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.			Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
					$	$	$	$							$	$	$	$	
0	42	68	3	338.5	66	103	3	592	20	0	45	56	3	412	64	78	4	735	21
1	38	167	9	548.5	72	265	11	982.5	21	1	43	225	5	663.5	63	400	6	1,202	22
2	31	71	2	382.5	51	159	4	687.5	22	2	44	72	8	467	68	159	13	853.5	23
3	32	37	2	295.5	47	87	3	509.5	23	3	39	60	5	349	55	110	10	638	24
4	42	37	3	224.5	61	72	2	380	24	4	30	30	1	260	49	86	1	475	25
5	23	17	4	152.5	45	27	3	267.5	25	5	36	21	1	203.5	53	38	1	363	26
6	23	7	1	113.5	38	13	1	199.5	26	6	32	8	1	152	65	18	3	281	27
7	20	14	2	79	42	19	3	144.5	27	7	35	7	2	111.5	48	17	3	195.5	28
8	19	3	2	48.5	45	6	1	87	28	8	19	5	2	68.5	26	8	21	132	29
9	5	2		25	8	2		37	29	9	6	2	1	44	11	6	2	78	30
10	3	2		18	7	3		26.5	30	10	7	1	1	35.5	15	2	1	61	31
11	1			14	1			18	31	11	3	3		25.5	4	4		42	32
12	1			13	1			17	32	12	1			21	5			36	33
13				12				16	33	13				20				31	34
14				12				16	34	14	1			20	5			31	35
15			1	12			1	16	35	15	1			19	1			26	36
16				11				15	36	16	1			18	2			25	37
17				11				15	37	17				17				23	38
18			1	11			1	15	38	18				17				23	39
19				10				14	39	19		1		16.5		1		22.5	40
20	1			10	1			14	40	20	1			16	2			22	41
21	1			9	3			13	41	21	1			15	1			20	42
22				8				10	42	22	2			14	3			19	43
23	3			8	3			10	43	23	4			12	4			16	44
24	1		1	5	1		1	7	44	24	2			8	2			12	45
25	2			3	4			5	45	25	4			6	8			10	46
26				1				1	46	26	2			2	2			2	47
27				1				1	47		359	491	30	3,013.5	556	927	65	5,374.5	
28				1				1	48										
29				1				1	49										
30	1			1	1			1	50										
	289	425	31	2,380.0	497	756	34	4,119.5											

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 22 Years.									
Years of Insurance.	NUMBER OF ENTRANTS, 1,141.				$1,986,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	56	75	7	533	88	116	16	935	22
1	45	278	8	864	79	482	23	1,525	23
2	60	121	9	611.5	94	262	14	1,051	24
3	60	61	4	451.5	68	145	5	739.5	25
4	44	39	6	337.5	74	60	21	564	26
5	34	25	2	255.5	56	57	5	410.5	27
6	35	11	3	201.5	40	14	7	314	28
7	33	16	1	150	50	44	1	238	29
8	29	19	1	98.5	46	29	2	150.5	30
9	11	2	1	58	11	6	1	85	31
10	14		2	45	21		4	70	32
11	5	1		28.5	10	1		44.5	33
12	3			23	2			34	34
13		1		19.5		3		30.5	35
14	1			19	5			29	36
15		1		17.5		1		23.5	37
16				17				23	38
17	2		2	17	2		2	23	39
18				13				19	40
19	2			13	1			19	41
20				11				18	42
21				11				18	43
22	2			11	3			18	44
23	2			9	3			15	45
24	4			7	8			12	46
25	2			3	2			4	47
26	1			1	2			2	48
	445	650	46	3,826.5	665	1,220	101	6,415.0	
Age at Entry, 23 Years.									
	NUMBER OF ENTRANTS, 1,264.				$2,268,000 INSURED.				
0	68	81	9	591.5	114	130	22	1,069	23
1	59	300	7	956	92	536	11	1,734	24
2	82	104	8	688	114	221	11	1,252.5	25
3	44	73	7	509.5	60	176	16	929	26
4	57	37	5	403.5	84	87	15	721.5	27
5	51	29	5	308.5	66	60	9	549	28
6	52	14	3	231	80	27	5	430.5	29
7	55	18		160	106	18		323	30
8	30	2		95	67	4		206	31
9	10	2		63	26	4		135	32
10	7			52	11			107	33
11	6	1	1	44.5	13	2	1	95	34
12	3	2		36	5	1		79.5	35
13				32				74	36
14	2	1		31.5	8	2		73	37

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 23 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,264				$2,268,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
15	2		2	29	9		6	64	38
16				25				49	39
17		1		24.5		1		48.5	40
18	2			24	16			48	41
19	2		1	22	2		3	32	42
20	3			19	3			27	43
21	2			16	2			24	44
22	2		1	14	3		1	22	45
23	3			11	7			18	46
24	4			8	4			11	47
25	3			4	3			7	48
26				1				4	49
27	1			1	4			4	50
	550	665	49	4,400.5	899	1,269	100	8,136.5	

Age at Entry, 24 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,399.				$2,603,000 INSURED.				Age at Exit.
0	64	77	6	661	102	132	5	1,235.5	24
1	57	328	11	1,088	108	567	17	2,080.5	25
2	88	130	10	791	133	240	25	1,552	26
3	61	84	7	586	100	191	17	1,178.5	27
4	67	51	5	450.5	109	156	13	888	28
5	59	34	3	336	114	96	6	640	29
6	54	11	5	251.5	106	25	10	459.5	30
7	42	14	2	180	63	26	3	318	31
8	34	8	1	125	75	15	1	231.5	32
9	22	7	2	82.5	33	14	2	141	33
10	5	1	1	54.5	8	1	2	98.5	34
11	8	1		47.5	11	1		87.5	35
12				39				76	36
13	1			39	10			76	37
14	3	1		37.5	8	2		65	38
15	1			34	5			56	39
16	1			33	1			51	40
17	1			32	5			50	41
18		1		30.5		1		44.5	42
19				30				44	43
20				30				44	44
21	2			30	5			44	45
22	1			28	1			39	46
23	4		2	27	5		2	38	47
24	6			21	13			31	48

TABLE II.

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 24 Years.

Years of Insurance.	Number of Entrants, 1,399.				$2,603,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims.	Exposed to Risk.	
					$	$	$	$	
25	8		1	15	9		1	18	49
26	5			6	7			8	50
27	1			1	1			1	51
	595	748	56	5,086.5	1,032	1,467	104	9,596.0	

Age at Entry, 25 Years.

	Number of Entrants, 1,547.				$3,119,000 Insured.				
0	66	103	3	722	134	161	3	1,479	25
1	68	347	15	1,201.5	94	697	22	2,472.5	26
2	79	126	9	882	107	337	24	1,839.5	27
3	49	93	6	684.5	71	275	12	1,402.5	28
4	72	58	4	554	93	206	10	1,079	29
5	81	40	3	429	136	94	3	826	30
6	62	18	4	316	142	45	8	617.5	31
7	49	19	2	231.5	126	37	3	426.5	32
8	45	8	1	167	77	19	2	269.5	33
9	23	4	4	115	33	4	4	179	34
10	15	1		85.5	23	3		138.5	35
11	7	2		69	15	2		113	36
12	1	2	1	60	1	1	1	96.5	37
13	2	2		56	3	3		92.5	38
14	1		1	53	2		1	88	39
15	2	1	1	50.5	5	4	1	83	40
16	2		2	47	2		4	75	41
17	3			43	3		2	69	42
18	2	1		38.5	2	1		63.5	43
19	1			36	2			61	44
20	1			35	2			59	45
21	3			34	3			57	46
22	1			31	2			54	47
23	6		2	30	9		5	52	48
24	10			22	16			38	49
25	7			12	15			22	50
26	5			5	7			7	51
	663	825	59	6,010.0	1,125	1,889	105	11,760.0	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 26 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,664.				$3,052,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	81	119	5	772.5	132	231	6	1,410.5	26
1	77	345	17	1,286.5	129	649	35	2,358.5	27
2	82	136	8	952	128	329	16	1,705.5	28
3	71	94	6	747	91	244	10	1,275	29
4	73	66	6	590	117	165	10	969.5	30
5	73	37	3	459.5	92	76	2	722	31
6	76	18	6	356	112	40	10	570	32
7	60	23	3	253.5	113	42	4	407	33
8	57	4	5	177	94	6	8	266	34
9	30	7	1	109.5	42	10	2	156	35
10	12	4	1	73	17	5	2	104.5	36
11	7	1		57.5	11	1		82.5	37
12		3		48.5		8		67	38
13			1	47			1	63	39
14	2			46	3			62	40
15	2			44	6			59	41
16	2			42	1			53	42
17	2			40	2			52	43
18	1			37.5	1	1		49.5	44
19				36				48	45
20	3			36	5			48	46
21	4		1	33	6		1	43	47
22	3			28	3			36	48
23	3			25	8			33	49
24	9		1	22	11		1	25	50
25	8			12	8			13	51
26	4			4	5			5	52
	742	858	64	6,335.0	1,137	1,807	108	10,683.5	

Age at Entry, 27 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,624.				$3,233,000 INSURED.				Age at Exit.
0	79	75	9	774.5	113	118	16	1,557.5	27
1	69	335	12	1,293.5	138	627	20	2,672.5	28
2	105	148	9	971	176	390	18	2,006	29
3	74	108	6	729	123	288	10	1,473	30
4	82	60	5	565	140	173	13	1,109.5	31
5	85	28	5	434	137	99	12	820.5	32
6	56	18	6	321	88	41	15	601.5	33
7	59	17	4	241.5	93	42	3	457	34
8	51	8	4	166	105	18	6	331	35
9	31	4		105	51	5		208.5	36

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 27 Years.

Years of Insurance.	Number of Entrants, 1,624.				$3,233,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
10	10	3	1	70.5	26	8	2	151	37
11	9	1		57.5	17	2		118	38
12	4	1		47.5	10	1		99.5	39
13	1	1	1	42.5	1	1	1	88.5	40
14	1			40	2			86	41
15				39				84	42
16		1	1	38.5		1	2	83.5	43
17	1			37	3			81	44
18	1		1	36	1		1	78	45
19	2	1		33.5	3	1		75.5	46
20	3	2		30	8	4		70	47
21				26				60	48
22	3			26	6			60	49
23	6			23	9			54	50
24	6			17	14			45	51
25	8			11	23			31	52
26	3			3	8			8	53
	749	811	64	6,178.5	1,295	1,819	119	12,510.0	

Age at Entry, 28 Years.

	Number of Entrants, 1,852.				$3,462,000 Insured.				
0	70	102	4	875	111	168	7	1,647	28
1	75	382	12	1,485	112	678	29	2,837	29
2	112	158	8	1,128	167	422	8	2,146	30
3	93	91	10	883.5	187	158	21	1,681	31
4	100	67	8	701.5	143	180	13	1,304	32
5	88	36	8	542	127	77	13	1,019.5	33
6	107	15	2	420.5	185	36	3	823	34
7	89	15	4	296.5	197	42	4	596	35
8	57	6	2	193	116	24	3	362	36
9	37	6	3	128	64	18	4	222	37
10	18	4	1	83	27	8	2	141	38
11	8	1	1	61.5	18	2	1	107	39
12	4	1		51.5	14	1		86.5	40
13			2	47			3	72	41
14	2			45	3			69	42
15	2		1	43	3		2	66	43
16	2		1	40	6		1	61	44
17	2			37	7			54	45
18	1	1		34.5	1	1		46.5	46
19	2	1		32.5	2	5		42.5	47

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, **28** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,852.				$3,462,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	2		1	30	2		1	38	48
21	4			27	4			35	49
22	3			23	5			31	50
23	7			20	10			26	51
24	2		1	13	2		1	16	52
25	8			10	10			13	53
26	1			2	1			3	54
27				1				2	55
28	1			1	2			2	56
	897	886	69	7,255.0	1,526	1,820	116	13,549.0	

Age at Entry, **29** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,713.				$3,520,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
0	78	89	6	812	150	139	12	1,690.5	29
1	63	323	18	1,378.5	107	599	54	2,919.5	30
2	79	133	16	1,069.5	130	354	31	2,282	31
3	81	104	10	856	125	309	25	1,789.5	32
4	93	57	8	684.5	146	208	18	1,381	33
5	89	47	5	531.5	152	124	8	1,051	34
6	90	23	5	402.5	186	60	8	799	35
7	79	27	3	282.5	160	60	8	545	36
8	55	8	3	183	94	21	6	336.5	37
9	38	3	1	119.5	77	9	2	221.5	38
10	15	6	3	76	24	10	7	133	39
11	5	3	1	53.5	12	5	2	94.5	40
12	1			46	2			78	41
13	1	1	3	44.5	2	1	13	75.5	42
14	3			40	9			60	43
15	3	1	1	36.5	2	1	3	50.5	44
16	3			32	11			45	45
17	1	1		28.5	1	1		33.5	46
18	1		1	27	1		2	32	47
19				25				29	48
20	2			25	3			29	49
21	1			23	1			26	50
22	2			22	3			25	51
23	5			20	6			22	52
24	8			15	9			16	53
25	4			7	4			7	54
26	3			3	3			3	55
	803	826	84	6,843.5	1,420	1,901	199	13,774.5	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 30 Years.

Years of Insurance.	Number of Entrants, 1,944.				$3,837,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'ed. $	Death Claims. $	Exposed to Risk. $	
0	90	79	8	932.5	149	150	16	1,843.5	30
1	76	356	18	1,589	116	659	51	3,192.5	31
2	111	146	9	1,244	174	354	14	2,519	32
3	93	102	18	1,000	144	299	38	2,004.5	33
4	103	82	8	797	156	232	17	1,557	34
5	125	50	6	620	207	174	9	1,181	35
6	87	23	11	452.5	166	61	34	847.5	36
7	110	21		332.5	176	67		583.5	37
8	67	15	2	204.5	109	31	3	358.5	38
9	43	2		127	76	6		228	39
10	14	1	1	82.5	22	1	1	148.5	40
11	11		3	67	31		3	125	41
12	2	2	1	52	6	6	5	88	42
13	1		1	48	1		1	74	43
14	1		1	46	5		1	72	44
15	2			44	3			66	45
16	1	1		41.5	1	3		61.5	46
17	1			40	1			59	47
18	1	2	1	38	1	3	1	56.5	48
19				35			2	53	49
20	1			33	1			51	50
21	1			32	1			50	51
22	1	2	1	30	2	4	1	47	52
23	10		1	27	13		1	42	53
24	8			16	16			28	54
25	4			8	3			12	55
26	4			4	9			9	56
	968	884	92	7,943.0	1,589	2,050	198	15,357.5	

Age at Entry, 31 Years.

Years of Insurance.	Number of Entrants, 1,674.				$3,563,000 Insured.				Age at Exit.
0	75	64	4	805	116	108	18	1,727.5	31
1	93	313	13	1,374.5	158	628	15	3,007	32
2	107	125	10	1,049.5	135	368	17	2,336	33
3	85	98	6	821	141	306	25	1,847	34
4	91	75	5	643.5	148	232	8	1,412	35
5	79	39	6	490.5	134	225	11	1,027.5	36
6	85	18	3	377	215	46	4	747	37
7	80	18	5	271	144	27	12	491.5	38
8	53	6	4	174	77	13	10	315.5	39
9	29	5	1	111.5	54	9	1	217.5	40

TABLE II.

OBSERVATIONS ON FEMALE LIFE

Age at Entry, 31 Years.

Years of Insurance.	Number of Entrants, 1,674.				$3,563,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	15	4	2	77	24	12	1	152	41
11	11	5	1	55.5	19	7	5	117.5	42
12	3	3		39.5	7	3		88.5	43
13	1			35	1			80	44
14	4	1		33.5	14	2		78	45
15	2	2		28	5	3		61.5	46
16	2			25	4			55	47
17	2		1	23	8		1	51	48
18				20				42	49
19				20				42	50
20	2			20	11			42	51
21	1			18	2			31	52
22		1		16.5		1		28.5	53
23	2	1		15.5	5	2		27	54
24	5		2	13	13		2	21	55
25	4			6	4			6	56
26	2			2	2			2	57
	833	778	63	6,565.0	1,441	1,992	130	14,053.5	

Age at Entry, 32 Years.

Years of Insurance.	Number of Entrants, 1,763.				$3,671,000 Insured.				Age at Exit.
0	81	60	8	851.5	139	100	17	1,785.5	32
1	65	383	14	1,422.5	122	755	23	3,037.5	33
2	87	139	10	1,082.5	193	392	21	2,319	34
3	78	83	10	874.5	120	256	19	1,781	35
4	101	62	5	714	158	150	7	1,439	36
5	84	34	8	560	162	145	22	1,126.5	37
6	103	35	4	433.5	183	85	6	827.5	38
7	87	27	2	295.5	174	50	6	571	39
8	53	6	1	190	106	18	1	357	40
9	30	7	1	129.5	60	15	5	233.5	41
10	19			95	22			161	42
11	14	3		74.5	27	3		137.5	43
12	1	1	1	58.5	2	2	1	108	44
13			1	56			3	104	45
14	2	3	1	53.5	4	5	2	98.5	46
15	4	1		48.5	4	1		89.5	47
16	2		1	44	16		3	85	48
17		1		40.5		2		65	49
18	1			40	1			64	50
19	2		1	39	5		1	63	51

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 32 Years.

Years of Insurance.	Number of Entrants, 1,763.				$3,671,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing. $	Amounts Discontin'd. $	Death Claims. $	Exposed to Risk. $	
20	2	1		35.5	3	1		56.5	52
21	2			33	3			53	53
22	7			31	8			50	54
23	6			24	11			42	55
24	8			18	15			31	56
25	6			10	10			16	57
26	4			4	6			6	58
	849	846	68	7,258.5	1,554	1,980	137	14,707.5	

Age at Entry, 33 Years.

Years of Insurance.	Number of Entrants, 1,785.				$3,471,000 Insured.				Age at Exit.
0	101	56	9	864.5	180	88	24	1,691.5	33
1	69	324	14	1,457	112	626	26	2,866	34
2	100	129	11	1,147.5	163	310	23	2,260	35
3	87	100	10	922	158	268	12	1,785	36
4	107	65	5	742.5	186	179	15	1,391.5	37
5	103	41	6	577.5	153	145	7	1,028.5	38
6	92	24	4	436	159	62	5	765	39
7	94	22	3	317	162	50	3	545	40
8	71	7		205.5	97	10		350	41
9	28	4	2	129	53	7	1	244.5	42
10	15	3	1	95.5	30	17	1	178.5	43
11	8	3		76.5	16	12		133	44
12	3	4	2	65	5	11	2	105.5	45
13	1			58	1			93	46
14	2	3	2	55.5	5	3	3	90.5	47
15	6	1		49.5	8	2		80	48
16	5			43	10			71	49
17	3		1	38	6		1	61	50
18	2	2	1	33	7	2	1	53	51
19	3			29	3			44	52
20				26				41	53
21	1	1		25.5	1	1		40.5	54
22	1	1		23.5	1	3		37.5	55
23	4			22	6			35	56
24	7		2	18	9		2	29	57
25	6		1	9	14		1	18	58
26	2			2	3			3	59
	921	790	74	7,467.5	1,548	1,796	127	14,040.5	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

					Age at Entry, 34 Years.					
Years of Insurance.	NUMBER OF ENTRANTS, 1,688.				$3,345,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	102	79	7	804.5	181	144	22	1,600.5	34
1	61	308	18	1,346	100	605	46	2,695.5	35
2	109	124	11	1,051	201	313	27	2,090.5	36
3	84	96	3	821	130	282	9	1,565	37
4	85	62	7	655	130	179	17	1,195.5	38
5	73	48	4	508	86	102	10	908	39
6	91	24	3	395	175	98	5	712	40
7	76	20	3	279	94	71	10	447.5	41
8	62	11	1	184.5	84	38	2	289	42
9	32	3	4	114.5	44	5	10	181.5	43
10	14	4		75	19	4		123	44
11	6	1	1	58.5	9	1	1	101.5	45
12	4	2		50	4	4		89	46
13	3			45	3			83	47
14	1			42	2			80	48
15	3	1		40.5	8	4		76	49
16	1			37	1			66	50
17				36				65	51
18				36				65	52
19	2		1	36	6		1	65	53
20	3			33	4			58	54
21	3			30	4			54	55
22	2			27	6			50	56
23	9			25	14			44	57
24	7			16	15			30	58
25	5			9	6			15	59
26	2			4	2			9	60
27	2			2	7			7	61
	842	783	63	6,760.5	1,335	1,850	160	12,765.5	

					Age at Entry, 35 Years.					
	NUMBER OF ENTRANTS, 1,705.				$3,622,000 INSURED.				
0	82	77	7	814	158	123	19	1,749.5	35
1	69	270	16	1,404	124	569	45	3,037.5	36
2	94	121	11	1,123.5	188	375	20	2,396.5	37
3	102	94	9	911	156	275	13	1,863.5	38
4	100	67	4	719.5	125	163	4	1,475.5	39
5	91	36	3	564	142	132	5	1,199	·40
6	117	28	7	438	188	115	14	928.5	41
7	94	17	3	291.5	182	69	10	634.5	42
8	53	6	1	183	108	58	1	379	43
9	34	10	1	121	41	38	2	222	44
10	18	3	1	79.5	35	4	1	158	45
11	7		1	59	12		1	120	46
12	2			51	2			107	47
13	4	1	2	48.5	20	3	5	103.5	48
14	3	1		41.5	2	2		76	49

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, **35** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,705.				$3,622,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
15	2		1	38	5		1	73	50
16			1	35			5	67	51
17	1	2	1	33	1	5	2	59.5	52
18	1	1		29.5	5	1		53.5	53
19	2	1	1	27.5	4	2	3	47	54
20				24			3	39	55
21				23				36	56
22	2			23	4			36	57
23	8			21	9			32	58
24	6			13	7			23	59
25	4			7	10			16	60
26	2			3	3			6	61
27	1			1	3			3	62
	899	735	71	7,127.0	1,534	1,934	154	14,941.0	

Age at Entry, **36** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,551.				$3,002,000 INSURED.				Age at Exit.
0	63	63	3	744	93	127	9	1,437.5	36
1	70	281	13	1,281.5	133	505	29	2,520.5	37
2	80	110	8	1,003	121	262	31	1,975	38
3	88	78	7	821	186	217	11	1,583.5	39
4	111	47	8	663.5	181	115	8	1,220.5	40
5	88	38	3	502	123	86	3	931	41
6	78	25	5	379.5	110	47	8	738.5	42
7	77	22	1	273	166	50	2	572	43
8	66	8	1	180	169	19	5	369.5	44
9	26	7	1	105.5	44	13	1	179.5	45
10	17	3	1	73.5	24	5	1	125.5	46
11	6	4		52	19	9		93.5	47
12	4			44	8			70	48
13	2	1		39.5	2	1		61.5	49
14	3	1		36.5	7	1		58.5	50
15				33				51	51
16				33				51	52
17	2			33	3			51	53
18	1			31	1			48	54
19			1	30			1	47	55
20	1			29	1			46	56
21	6		1	28	10		1	45	57
22	5			21	5			34	58
23	5			16	9			29	59
24	4			11	9			20	60
25	6			7	10			11	61
26	1			1	1			1	62
	810	688	53	6,471.5	1,435	1,457	110	12,370.5	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 37 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,518.				$3,045,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	73	64	8	742	147	86	16	1,479.5	37
1	81	270	15	1,268	146	500	35	2,546	38
2	91	103	7	985.5	143	223	15	2,003.5	39
3	84	92	6	790	143	280	12	1,594	40
4	100	51	3	628.5	167	123	6	1,237.5	41
5	79	32	7	484	156	94	14	956	42
6	91	18	1	373	134	41	2	718.5	43
7	94	12	2	266	164	39	5	542.5	44
8	47	7	1	160.5	140	24	1	342	45
9	29	1	4	108.5	41	10	6	184	46
10	12	3		73.5	19	4		130	47
11	7	2		59	8	1		108.5	48
12	2	1	1	50.5	5	1	5	99.5	49
13	2	1		46.5	4	1		88.5	50
14	2			44	3			84	51
15	1	2		41	1	6		78	52
16	2	1	2	38.5	8	1	7	73.5	53
17	3	1		33.5	4	5		55.5	54
18	1			30	1			49	55
19		3		27.5		3		46.5	56
20	1			26	4			45	57
21				25				41	58
22	5			25	6			41	59
23	5			20	7			35	60
24	7		1	15	12		2	28	61
25	4			7	7			14	62
26	3			3	7			7	63
	826	664	58	6,371.0	1,477	1,442	126	12,627.5	

Age at Entry, 38 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,508.				$3,086,000 INSURED.				Age at Exit.
0	69	66	5	721	148	110	13	1,488	38
1	65	240	14	1,248	150	464	26	2,583	39
2	82	119	15	989.5	181	316	27	2,017	40
3	77	76	10	795	134	237	23	1,532.5	41
4	88	67	5	636.5	153	155	7	1,179.5	42
5	107	32	6	494	159	89	14	897.5	43
6	97	8	5	361	159	24	7	668	44
7	65	17	5	246.5	123	45	11	467.5	45
8	45	6		165	82	13		304.5	46
9	43	4		115	68	8		212	47

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, **38** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,508.				$3,086,000 INSURED.				Age at Exit.
	Existing.	Discon-tinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	10	2	1	69	23	12	1	134	48
11	8	2		56	16	2		103	49
12	1			47	1			86	50
13	2			46	6			85	51
14	5		1	44	14		1	79	52
15				38				64	53
16	3	1		37.5	5	3		62.5	54
17	1			34	1			56	55
18		1	5	32.5		1	4	54.5	56
19	.		1	27			1	50	57
20	3		5	26	4		10	49	58
21	1	1	1	17.5	5	5	1	32.5	59
22	5			15	9			24	60
23				10				15	61
24	3			10	4			15	62
25	5			7	7			11	63
26	2			2	4			4	64
	787	642	79	6,290.0	1,456	1,484	146	12,274.0	

Age at Entry, **39** Years.

	NUMBER OF ENTRANTS, 1,330.				$2,782,000 INSURED.				
0	81	45	6	642.5	148	80	14	1,351	39
1	51	209	10	1,093.5	102	414	14	2,333	40
2	101	105	4	875.5	209	290	5	1,865	41
3	72	89	8	673.5	130	237	12	1,387.5	42
4	65	53	10	522.5	73	185	25	1,034.5	43
5	77	29	7	406.5	133	78	30	805	44
6	76	20	1	298	120	48	1	579	45
7	60	10	4	206	116	29	7	419.5	46
8	41	5		134.5	99	16		274	47
9	21	3		89.5	37	3		165.5	48
10	16			67	34			127	49
11	8		1	51	10		1	93	50
12.	3	2	1	41	6	6	2	79	51
13				36				68	52
14	1		1	36	1		1	68	53
15				34				66	54
16	3			34	15			66	55
17		2		30		4		49	56
18	2		3	29	2		3	47	57
19	1	2		23	5	7		38.5	58

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, **39** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,330.				$2,782,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	1			21	1			30	59
21	2		1	20	3		1	29	60
22				17				25	61
23	3		2	17	4		2	25	62
24	5			12	6			19	63
25	4			7	5			13	64
26	1			3	4			8	65
27	2			2	4			4	66
	697	574	59	5,422.0	1,267	1,397	118	11,068.5	

Age at Entry, **40** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,444.				$2,888,000 INSURED.				Age at Exit.
0	73	63	5	690.5	129	108	8	1,390	40
1	67	242	17	1,182	119	527	33	2,379.5	41
2	94	110	5	922	174	243	19	1,842.5	42
3	62	77	10	729.5	88	204	20	1,426	43
4	83	65	9	586.5	164	184	21	1,124	44
5	84	22	7	451	133	64	17	815	45
6	87	18	5	340	160	34	10	616	46
7	81	16	3	231	147	33	4	412.5	47
8	45	4		137	87	9		240.5	48
9	25	2	1	89	37	6	1	146	49
10	16	2		61	20	3		103.5	50
11	7	2		43	14	3		80.5	51
12	1	2		34	1	7		61.5	52
13	2	1		31.5	3	5		54.5	53
14	2	1		28.5	10	3		47.5	54
15			1	26			2	36	55
16				25				34	56
17	1	1	1	24.5	1	2	2	33	57
18				22				29	58
19	1			22	2			29	59
20				21				27	60
21			2	21			1	27	61
22	1	1	1	18.5	1	1	1	25.5	62
23	4			16	7			23	63
24	7	1		11.5	9	2		15	64
25	4			4	5			5	65
	747	630	67	5,768.0	1,311	1,438	139	11,023.0	

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 41 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,077.				$2,277,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	50	35	3	521	84	67	8	1,105	41
1	43	182	10	898	97	374	16	1,931	42
2	58	74	10	717	122	192	20	1,535	43
3	53	62	5	581	107	168	14	1,213	44
4	74	43	4	470.5	139	117	8	949.5	45
5	68	26	5	358	111	61	12	713.5	46
6	63	12	4	266	116	37	9	541.5	47
7	64	19	2	183.5	138	60	3	368	48
8	46	3	1	106.5	78	12	1	191	49
9	15	2		57	21	5		103.5	50
10	8	6		38	11	25		67	51
11	2			27	4			44	52
12	2		1	25	2		1	40	53
13	1			22	1			37	54
14	3			21	8			36	55
15				18				28	56
16	1			18	5			28	57
17	2		1	17	3		2	23	58
18	1		1	14	1		1	18	59
19				12				16	60
20	1			12	1			16	61
21				11				15	62
22	1			11	1			15	63
23	1	1	1	9.5	1	1	1	13.5	64
24	4			7	5			11	65
25	1			3	3			6	66
26	2			2	3			3	67
	564	465	48	4,426.0	1,062	1,119	96	9,067.5	

Age at Entry, 42 Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,101.				$2,242,000 INSURED.				Age at Exit.
0	64	42	4	529.5	124	71	9	1,085.5	42
1	39	176	10	903	56	348	27	1,864	43
2	65	74	10	729	119	174	23	1,520	44
3	69	55	8	589.5	92	162	29	1,210	45
4	64	35	4	467.5	137	81	9	967.5	46
5	69	22	7	371	134	67	14	747.5	47
6	65	25	5	271.5	131	58	7	537	48
7	54	11	2	183.5	100	23	2	358.5	49
8	43	5		119.5	86	10		240	50
9	17	2	1	73	42	3	1	147.5	51

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, **42** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 1,101.				$2,242,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
10	11	2		53	17	4		101	52
11	9			41	26			82	53
12	2		1	32	4		1	56	54
13	1			29	1			51	55
14	1	1		27.5	2	2		49	56
15	2			26	7			46	57
16	1	2		23	2	6		36	58
17	2			21	2			31	59
18				19				29	60
19	1			19	2			29	61
20				18				27	62
21	1		1	18	1		2	27	63
22				16				24	64
23	1			16	1			24	65
24	6			15	8			23	66
25	4			9	9			15	67
26	5			5	6			6	68
	596	452	53	4,624.5	1,109	1,009	124	9,333.5	

Age at Entry, **43** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 981.				$2,065,000 INSURED.				Age at Exit.
0	56	37	5	472	79	49	13	1,008	43
1	38	144	8	811	92	338	17	1,755	44
2	65	60	7	663	114	179	19	1,387.5	45
3	52	49	6	536.5	82	149	12	1,090.5	46
4	69	31	5	438.5	140	68	14	888	47
5	62	21	3	338.5	153	52	2	674	48
6	64	12	3	257	106	17	19	484.5	49
7	66	16	3	176	123	32	4	335	50
8	40	3		97.5	77	4		190	51
9	12	3		54.5	15	9		106.5	52
10	12	3	3	39.5	25	3	9	85.5	53
11	2	2	1	22	4	4	1	48	54
12	2			18	6			41	55
13				16				35	56
14	1	1		15.5	5	3		33.5	57
15				14				27	58
16			1	14			1	27	59
17	1			13	3			26	60
18				12				23	61
19	1			12	2			23	62

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OBSERVATIONS ON FEMALE LIFE

Age at Entry, **43** Years.

Years of Insurance.	NUMBER OF ENTRANTS, 981.				$2,065,000 INSURED.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Amounts Existing.	Amounts Discontin'ed.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
20	2			11	2			21	63
21	1		1	9	1		1	19	64
22	1			7	5			17	65
23	1			6	1			12	66
24			1	5			5	11	67
25	3			4	5			6	68
26	1			1	1			1	69
	552	382	47	4,063.5	1,041	907	117	8,375.0	

Age at Entry, **44** Years.

	NUMBER OF ENTRANTS, 926.				$1,871,000 INSURED.				
0	67	22	5	452	125	37	14	917	44
1	28	136	10	764	48	296	15	1,547	45
2	55	54	5	631	101	125	5	1,273.5	46
3	45	47	5	520.5	62	139	8	1,035.5	47
4	67	32	6	431	103	78	19	857	48
5	66	13	3	335.5	140	50	9	671	49
6	63	19	5	250.5	155	48	13	473	50
7	49	6	2	170	73	14	2	274	51
8	42	5	2	113.5	64	11	3	186.5	52
9	23	1	2	66.5	43	2	3	113	53
10	9	3	1	39.5	18	3	2	64.5	54
11	8	1	2	27.5	13	1	5	42.5	55
12	1		1	17	1		2	24	56
13				15				21	57
14				15				21	58
15	1			15	1			21	59
16			2	14			2	20	60
17	1			12	5			18	61
18		1		10.5		1		12.5	62
19				10				12	63
20	1		1	10	1		3	12	64
21				8				8	65
22		1		7.5		1		7.5	66
23			1	7			1	7	67
24	3			6	3			6	68
25	1			3	1			3	69
26	1			2	1			2	70
27	1			1	1			1	71
	532	341	53	3,954.5	959	806	106	7,650.5	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 45 Years.

Years of Insurance	No. of Entrants, 921.				$1,804,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	
0	44	31	6	445	93	48	8	878	45
1	41	148	4	766	62	294	3	1,508	46
2	58	56	4	619	153	178	4	1,207	47
3	45	50	5	504	70	114	10	904	48
4	67	25	5	416.5	105	54	19	740	49
5	65	26	5	319	120	50	16	564	50
6	47	8	3	232	66	16	7	395	51
7	61	8	2	174	76	14	10	307	52
8	38	5	3	104.5	71	10	7	209	53
9	19	1	3	60.5	35	3	5	124.5	54
10	12	2		37	26	1		82.5	55
11	2	2		23	2	11		50.5	56
12	1		1	20	1		1	43	57
13		2		17		4		39	58
14				16				37	59
15	4	1	1	15.5	6	1	10	36.5	60
16				10				20	61
17				10				20	62
18				10				20	63
19				10				20	64
20	1			10	2			20	65
21	3			9	6			18	66
22				6				12	67
23	1			6	2			12	68
24	3			5	4			10	69
25	2			2	6			6	70
	514	365	42	3,847.0	906	798	100	7,283.0	

Age at Entry, 46 Years.

Years of Insurance	No. of Entrants, 784.				$1,608,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	
15				10				13	61
16				10				13	62
17				10				13	63
18	1			10	3			13	64
19		1		8.5		1		9.5	65
20	1			8	2			9	66
21			1	7			2	7	67
22				6				5	68
23	2		1	6	1		1	5	69
24	2			3	2			3	70
25	1			1	1			1	71
	429	321	34	3,155.5	792	758	58	6,267.0	

Age at Entry, 47 Years.

Years of Insurance	No. of Entrants, 653.				$1,299,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	
0	32	21	2	316	63	32	9	633.5	47
1	36	82	6	557	61	163	8	1,113.5	48
2	43	52	2	448	81	102	3	912	49
3	36	34	2	360	54	92	2	731	50
4	44	28	4	291	92	89	6	584.5	51
5	35	12	4	223	49	45	8	419.5	52
6	45	4	3	176	74	11	7	334.5	53
7	38	2	2	125	70	7	2	244.5	54
8	29	4	1	82	57	10	1	164	55
9	21	3	2	48.5	45	5	2	98.5	56
10	7	1		23.5	17	6		46	57
11	5	1		15.5	11	2		25	58
12				10				13	59
13				10				13	60
14	1			10	1			13	61
15				9				12	62
16				9				12	63
17				9				12	64
18				9				12	65
19	1			9	1			12	66
20	1			8	2			11	67
21				7				9	68
22	1		1	7	1		1	9	69
23	3			5	3			7	70
24	1			2	2			4	71
25	1			1	2			2	72
	380	244	29	2,770.5	686	564	49	5,447.5	

Age at Entry, 46 Years.

Years of Insurance	No. of Entrants, 784.				$1,608,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	
0	53	29	4	377.5	93	46	11	781	46
1	30	128	6	634	77	273	13	1,321.5	47
2	48	47	3	510.5	73	123	6	1,033.5	48
3	45	40	8	416	75	107	12	839.5	49
4	50	25	2	330.5	100	59	3	669.5	50
5	45	23	2	254.5	93	55	2	509.5	51
6	35	9	3	191.5	72	32	1	371	52
7	46	6	1	146	79	14	1	275	53
8	43	6		93	70	30		173	54
9	15	5		44.5	31	7		84.5	55
10	6	2		26	9	11		44.5	56
11	4		2	19	8		5	30	57
12	2		1	13	3		1	17	58
13				10				13	59
14				10				13	60

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 48 Years.

No. of Entrants, 778. — $1,622,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	30	30	2	374	54	59	3	781.5	48
1	57	103	4	664.5	78	213	8	1,399.5	49
2	60	50	9	527	86	131	20	1,141.5	50
3	38	53	7	406.5	77	136	19	902	51
4	43	22	6	324	116	75	9	700.5	52
5	51	19	7	254.5	88	44	7	516	53
6	53	17	2	178.5	120	62	2	368	54
7	36	5	1	112.5	73	20	1	205	55
8	28	3		71.5	61	8		117	56
9	14			42	17			52	57
10	15			28	11			35	58
11	1			13	2			24	59
12	1	1		11.5	2	1		21.5	60
13	1	1		9.5	1	3		17.5	61
14	1			8	1			15	62
15				7				14	63
16				7				14	64
17				7				14	65
18				7				14	66
19	1			7	5			14	67
20	1			6	1			9	68
21			1	5			2	8	69
22	2			4	4			6	70
23	1			2	1			2	71
24				1				1	72
25				1				1	73
26	1			1	1			1	74
	435	304	39	3,080.0	799	752	71	6,394.0	

Age at Entry, 49 Years.

No. of Entrants, 555. — $1,145,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	37	13	3	271	125	25	7	560	49
1	29	74	3	465	48	133	9	921.5	50
2	41	29	5	381.5	77	72	18	762	51
3	37	37	6	302.5	51	93	14	584.5	52
4	39	15	7	233.5	92	55	18	445.5	53
5	40	7	4	176.5	60	31	11	292.5	54
6	38	9	3	124.5	52	15	9	198.5	55
7	27	5	3	76.5	40	17	6	121.5	56
8	14	2		43	24	2		66	57
9	6	3		26.5	9	5		38.5	58
10	4	2	1	18	7	3	2	25.5	59
11	4	1		11.5	4	1		14.5	60
12				7				10	61
13				7				10	62
14				7				10	63
15				7				10	64
16				7				10	65
17				7				10	66
18	1			7	1			10	67
19	1			6	1			9	68
20	1	1		4.5	1	3		6.5	69
21			1	3			1	4	70
22				2				3	71
23	2			2	3			3	72
	321	198	36	2,196.5	595	455	95	4,126.0	

Age at Entry, 50 Years.

No. of Entrants, 588. — $1,205,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	36	24	6	282	84	50	7	577.5	50
1	26	77	9	483.5	41	196	17	966	51
2	41	37	6	391.5	73	93	7	763.5	52
3	31	20	2	316	50	64	7	605	53
4	51	17	3	264.5	86	45	8	493.5	54
5	39	14	3	195	68	42	3	356	55
6	39	9	3	141.5	62	27	5	250.5	56
7	23	6	5	92	40	10	10	165	57
8	25	3	1	59.5	39	7	2	106.5	58
9	11	1	2	31.5	28	1	2	61.5	59
10	4	1		17.5	4	1		30.5	60
11	2	1	1	12.5	3	2	1	25	61
12	2			9	3			20	62
13				7				17	63
14				7				17	64
15				7				17	65
16				7				17	66
17			1	7			1	17	67
18	1			6	1			16	68
19				5				15	69
20			1	5			5	15	70
21		1		3.5		2		9	71
22	1			3	5			8	72
23	1			2	1			3	73
24	1			1	2			2	74
	334	211	43	2,356.5	590	540	75	4,573.5	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 51 Years.

No. of Entrants, 465. — $905,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	30	21	1	222	37	33	1	436	51
1	27	66	3	380	38	136	9	766	52
2	34	23	7	305.5	52	66	11	618	53
3	25	18	2	244	43	38	5	503	54
4	42	16	1	200	68	47	1	412.5	55
5	33	10	4	144	65	26	12	307	56
6	26	7	1	98.5	60	14	1	210	57
7	19	7	3	64.5	35	20	4	132	58
8	15		1	39	37		1	83	59
9	6	1		22.5	18	1		44.5	60
10	7			16	10			26	61
11		2		8		5		13.5	62
12			1	7			1	11	63
13				6				10	64
14				6				10	65
15				6				10	66
16				6				10	67
17				6				10	68
18			1	6			1	10	69
19				5				9	70
20				5				9	71
21			1	5			2	9	72
22				4				7	73
23	1			4	1			7	74
24	1			3	3			6	75
25	1			2	1			3	76
26	1			1	2			2	77
	268	171	26	1,816.0	470	386	49	3,674.5	

Age at Entry, 52 Years.

No. of Entrants, 433. — $902,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	31	6	1	213.5	68	8	1	447	52
1	34	53	2	368.5	80	101	6	774.5	53
2	26	22	1	295	50	60	3	608	54
3	37	16	3	249	59	54	6	498	55
4	34	18	7	192	64	53	14	379.5	56
5	25	8	3	138	60	17	8	266.5	57
6	26	5	2	103.5	41	9	6	185.5	58
7	22	6		70	48	9		129.5	59
8	11	3		43.5	13	9		72.5	60
9	13		1	31	25		3	55	61
10	3			17	7			27	62
11	2			14	6			20	63
12				12				14	64
13				12				14	65
14		1		11.5		1		13.5	66
15	1			11	1			13	67
16	2		1	10	1		1	12	68
17			1	7			2	10	69
18				6				8	70
19	1			6	1			8	71
20				5				7	72
21	1			5	1			7	73
22	2			4	3			6	74
23	1			2	1			3	75
24	1			1	2			2	76
	273	138	22	1,827.5	531	321	50	3,580.5	

Age at Entry, 53 Years.

No. of Entrants, 320. — $633,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	Age at Exit
0	15	16	2	152	14	35	2	299	53
1	26	45	3	264.5	61	108	18	528	54
2	17	22	2	202	41	51	6	369.5	55
3	21	11	2	166.5	27	20	3	287	56
4	21	9	1	133.5	34	21	1	236.5	57
5	15	8	3	103	24	31	6	175.5	58
6	25	2	2	80	33	2	2	129	59
7	12	2	2	51	28	6	2	90	60
8	16	2		35	23	1		56.5	61
9	4	1		17.5	14	1		32.5	62
10	4		1	13	6		1	18	63
11	1			8	2			11	64
12	1			7	1			9	65
13			1	6			1	8	66
14				5				7	67
15	1			5	1			7	68
16				4				6	69
17				4				6	70
18		1		3.5		2		5	71
19				3				4	72
20				3				4	73
21				3				4	74
22			1	3			1	4	75
23	1			2	1			3	76
24	1			1	2			2	77
	181	119	20	1,275.5	312	278	43	2,301.5	

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 54 Years.

No. of Entrants, 327. — $675,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	22	18	2	154.5	46	31	4	322	54
1	24	44	2	263	38	121	11	533.5	55
2	26	15	4	207.5	40	42	4	403	56
3	14	15	2	162.5	22	43	2	316.5	57
4	29	5	2	136.5	48	12	3	265	58
5	19	5		100.5	43	15		200.5	59
6	21	5		76.5	26	15		142.5	60
7	16	1	1	52.5	32	4	5	107	61
8	11	1		34.5	9	1		67.5	62
9	7			23	12			58	63
10	3		1	16	8		5	46	64
11	4		1	12	10		5	33	65
12				7				18	66
13				7				18	67
14		1	1	6.5		1	1	17.5	68
15				5				16	69
16				5				16	70
17				5				16	71
18				5				16	72
19			1	5			5	16	73
20				4				11	74
21		1		3.5		5		8.5	75
22	1			3	1			6	76
23				2				5	77
24			2	2			5	5	78
	197	111	19	1,299.0	335	290	50	2,663.5	

Age at Entry, 55 Years.

No. of Entrants, 297. — $638,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	14	12	2	142.5	38	26	3	306	55
1	18	46	2	246	38	81	4	530.5	56
2	17	21	4	192.5	22	57	21	419.5	57
3	20	13	3	154.5	46	22	22	337	58
4	14	8	3	121	30	16	5	250	59
5	12	4	2	98	26	12	4	201	60
6	26	3	1	80.5	42	10	10	160	61
7	11	1	1	51.5	25	5	2	100.5	62
8	12	1	1	38.5	20	1	1	70.5	63
9	4	2	1	24	5	1	1	48.5	64
10	4	2	1	17	11	8	1	38	65
11		1	1	10.5		1	2	21.5	66
12	1		1	9	1		1	19	67
13			1	7			1	17	68
14				6				16	69
15				6				16	70
16				6				16	71
17			1	6			5	16	72
18				5				11	73
19	1			5	2			11	74
20			3	4			8	9	75
21	1			1	1			1	76
	155	114	28	1,231.5	307	240	91	2,615.0	

Age at Entry, 56 Years.

No. of Entrants, 226. — $487,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing	Discontinued	Death Claims	Exposed to Risk	Age at Exit
0	12	6	2	110	18	16	6	235.5	56
1	11	33	4	189.5	20	64	10	415	57
2	15	16	2	150	19	35	2	335.5	58
3	10	14	1	118	19	41	1	276.5	59
4	10	7	4	96.5	11	14	13	229	60
5	20	4	2	77	35	9	10	193.5	61
6	13	3		51.5	40	12		138	62
7	11	2	1	36	13	6	2	89	63
8	9		3	23	31		6	71	64
9	5		2	11	18		4	34	65
10				4				12	66
11	1			4	2			12	67
12				3				10	68
13	1		1	3	2		5	10	69
14				1				3	70
15				1				3	71
16				1				3	72
17				1				3	73
18				1				3	74
19				1				3	75
20				1				3	76
21				1				3	77
22				1				3	78
23	1			1	3			3	79
	119	85	22	886.5	231	197	59	2,091.0	

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 57 Years.

Years of Insurance.	No. of Entrants, 200.				$455,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
					$	$	$	$	
0	11	5	3	97.5	23	7	12	224	57
1	17	23	5	169.5	27	50	14	388	58
2	5	9	3	131.5	13	11	5	316.5	59
3	12	9	1	114.5	23	25	2	280.5	60
4	19	2	1	96	76	7	1	239.5	61
5	13	5	4	72.5	19	17	17	150.5	62
6	14	4	1	51	22	11	5	100.5	63
7	12	1	1	33.5	21	5	4	65.5	64
8	6			20	14			38	65
9	6	2		13	5	8		20	66
10				6				11	67
11	1			6	1			11	68
12	1			5	1			10	69
13				4				9	70
14				4				9	71
15				4				9	72
16			1	4			5	9	73
17		1		2.5		1		3.5	74
18				2				3	75
19				2				3	76
20				2				3	77
21	1		1	2	2		1	3	78
	118	61	21	842.5	247	142	66	1,906.5	

Age at Entry, 58 Years.

Years of Insurance.	No. of Entrants, 181.				$402,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	10	3		89	24	5		198.5	58
1	11	25	2	155.5	31	42	6	352	59
2	5	12	5	124	15	18	14	285	60
3	9	10	1	103	13	36	2	229	61
4	8	4	2	86	11	18	6	187	62
5	14	7	3	70.5	39	20	8	151	63
6	11	2	2	49	25	5	3	91.5	64
7	6	2	3	34	7	3	6	59.5	65
8	6			24	12			45	66
9	3		2	18	4		6	33	67
10	2			13	1			23	68
11	1		1	11	2		2	22	69
12				9				18	70
13			2	9			6	18	71
14				7				12	72
15	1			7	2			12	73
16	1			6	1			10	74
17				5				9	75
18				5				9	76
19			1	5			1	9	77
20				4				8	78
21			2	4			5	8	79
22	1			2	2			3	80
23			1	1			1	1	81
	89	65	27	841.0	189	147	66	1,793.5	

Age at Entry, 59 Years.

Years of Insurance.	No. of Entrants, 134.				$253,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	3	3		65.5	4	7		123	59
1	6	14	2	121	19	45	2	219.5	60
2	11	9	1	101.5	8	27	1	162.5	61
3	7	3	2	83.5	20	5	3	137.5	62
4	8	4	3	71	7	8	4	108	63
5	12	4	2	56	10	7	2	89.5	64
6	10		3	40	10		4	74	65
7	9		3	27	24		2	60	66
8	1	2	2	14	2	11	1	28.5	67
9	3			10	2			20	68
10	1			7	5			18	69
11	1			6	1			13	70
12	1			5	2			12	71
13				4				10	72
14				4				10	73
15				4				10	74
16			1	4			5	10	75
17				3				5	76
18	1		1	3	1		1	5	77
19				1				3	78
20	1			1	3			3	79
	75	39	20	631.5	118	110	25	1,121.5	

Age at Entry, 60 Years.

Years of Insurance.	No. of Entrants, 122.				$215,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	7	2		60	22	4		105.5	60
1	6	8	3	109	7	17	3	180.5	61
2	8	9	4	91.5	11	23	4	150.5	62
3	4	3	1	73.5	8	3	3	122.5	63
4	8	2	2	66	8	3	6	108.5	64
5	6	1	3	54.5	12	1	4	92.5	65
6	8	8	3	41	14	9	5	71.5	66
7	6	1		25.5	16	1		47.5	67
8	6	1		18.5	12	1		30.5	68
9	4	2		11	5	2		17	69

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OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 60 Years.

Years of Insurance	No. of Entrants, 122.				$215,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
10				6				11	70
11				6				11	71
12				6				11	72
13	1	1		5.5	2	1		10.5	73
14			1	4			1	8	74
15	1			3	1			7	75
16				2				6.	76
17				2				6	77
18				2				6	78
19				2				6	79
20				2				6	80
21			2	2			6	6	81
	65	38	19	593.0	118	65	32	1,021.0	

Age at Entry, 61 Years.

Years of Insurance	No. of Entrants, 90.				$195,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	3	1		44.5	7	2		96.5	61
1	2	12	1	80	1	26	1	173	62
2	8	6	2	68	10	13	3	151.5	63
3	7	2	3	54	13	3	6	130.5	64
4	6	2	1	42	17	2	1	109	65
5	9	1		33.5	33	5		87.5	66
6	6	2		23	15	1		51.5	67
7	3	1	1	15.5	8	5	5	33.5	68
8	5		1	11	8		1	18	69
9	2			5	6			9	70
10				3				3	71
11				3				3	72
12				3				3	73
13				3				3	74
14			1	3			1	3	75
15				2				2	76
16				2				2	77
17				2				2	78
18				2				2	79
19				2				2	80
20			1	2			1	2	81
21				1				1	82
22				1				1	83
23	1			1	1			1	84
	52	27	11	406.5	119	57	19	890.0	

Age at Entry, 62 Years.

Years of Insurance	No. of Entrants, 54.				$111,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0	8			27	16			55.5	62
1	3	5	1	43.5	12	9	5	90.5	63
2		5	2	34.5		8	2	65	64
3	1	2	2	29	5	4	2	57	65
4	5	3		23.5	13	9		43.5	66
5	7	1		16.5	11	2		25	67
6				9				13	68
7	2	2		8	3	5		10.5	69
8	3			5	3			5	70
9	1	1		1.5	1	1		1.5	71
	30	19	5	197.5	64	38	9	366.5	

Age at Entry, 63 Years.

Years of Insurance	No. of Entrants, 61.				$140,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	3	2		29.5	2	3		68.5	63
1	2	8		52	3	14		128	64
2	1	5	3	43.5	1	11	15	112.5	65
3	4	2	1	36	9	10	7	86	66
4	8	1	3	29.5	21	1	10	64.5	67
5	4	1	1	17.5	3	2	7	32	68
6	6	2		11	8	3		19.5	69
7				4				10	70
8	2			4	3			10	71
9				2				7	72
10				2				7	73
11				2				7	74
12				2				7	75
13			1	2			2	7	76
14			1	1			5	5	77
	30	21	10	238.0	50	44	46	571.0	

Age at Entry, 64 Years.

Years of Insurance	No. of Entrants, 50.				$104,000 Insured.				Age at Exit.
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	1	1		24.5	1	5		49.5	64
1	1	4	2	46	5	4	2	96	65
2	3	5		38.5	4	5		84.5	66
3	2	2	1	32	2	3	15	76.5	67
4	3	2	1	27	3	2	6	57	68
5	2	3	1	20.5	10	10	1	42	69
6	2			16	1			26	70
7	1		1	14	2		3	25	71
8	4			12	5			20	72
9	2		3	8	3		3	15	73

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 64 Years.

Years of Insurance	No. of Entrants, 50.				$104,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
10		1		2.5		3		7.5	74
11			1	2			1	6	75
12				1				5	76
13				1				5	77
14				1				5	78
15				1				5	79
16	1			1	5			5	80
	22	18	10	248.0	41	32	31	530.0	

Age at Entry, 65 Years.

Years of Insurance	No. of Entrants, 42.				$86,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0	1	4		19	5	4		41	65
1	2	5		34.5	2	13		70.5	66
2	3	2	1	29	4	5	1	59.5	67
3	6			24	16			52	68
4	6	1	3	17.5	9	2	12	35	69
5	1			8	1			13	70
6			2	7			6	12	71
7	1	1		4.5	1	1		5.5	72
8	1	1		2.5	1	2		3	73
9				1				1	74
10				1				1	75
11				1				1	76
12				1				1	77
13				1				1	78
14				1				1	79
15				1				1	80
16				1				1	81
17				1				1	82
18				1				1	83
19				1				1	84
20				1				1	85
21				1				1	86
22				1				1	87
23	1			1	1			1	88
	22	14	6	161.0	40	27	19	306.5	

Age at Entry, 66 Years.

Years of Insurance	No. of Entrants, 28.				$54,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing. $	Discontinued. $	Death Claims. $	Exposed to Risk. $	
0		2		13		2		26	66
1	1	3	1	24.5	1	6	3	49	67
2		6	1	18		12	3	36	68
3			2	14			1	27	69
4	2		1	12	6		1	26	70
5				9				19	71
6	1	1	1	8.5	5	3	3	17.5	72
7	2			6	4			8	73
8	1			4	1			4	74
9			1	3			1	3	75
10				2				2	76
11			1	2			1	2	77
12			1	1			1	1	78
	7	12	9	117.0	17	23	14	220.5	

Age at Entry, 67 Years.

Years of Insurance	No. of Entrants, 14.				$19,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0				7				9.5	67
1	1		2	14	1		2	19	68
2		1	1	10.5		1	1	15.5	69
3	2	1		8.5	2	1		13.5	70
4				6				11	71
5				6				11	72
6				6				11	73
7				6				11	74
8				6				11	75
9		1		5.5		1		10.5	76
10			2	5			2	10	77
11				3				8	78
12		1	1	2.5		1	1	7.5	79
13				1				6	80
14				1				6	81
15				1				6	82
16		1		1			6	6	83
	3	4	7	90.0	3	4	12	172.5	

Age at Entry, 68 Years.

Years of Insurance	No. of Entrants, 5.				$7,000 Insured.				Age at Exit
	Existing.	Discontinued.	Died.	Exposed to Risk.	Existing.	Discontinued.	Death Claims.	Exposed to Risk.	
0				2.5				3.5	68
1				5				7	69
2			1	5			2	7	70
3				4				5	71
4				4				5	72

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OBSERVATIONS ON FEMALE LIFE

Age at Entry, 68 Years.

Years of Insurance	No. of Entrants, 5.				$7,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	
5	2			4	3			5	73
6			1	2			1	2	74
7				1				1	75
8				1				1	76
9				1				1	77
10	1			1	1			1	78
	3		2	30.5	4		3	38.5	

Age at Entry, 70 Years.

Years of Insurance	No. of Entrants, 4.				$7,000 Insured.				Age at Exit
	Existing	Discontinued	Died	Exposed to Risk	Existing $	Discontinued $	Death Claims $	Exposed to Risk $	
5		1		1.5		2		4	75
6				1				3	76
7				1				3	77
8				1				3	78
9		1		1			3	3	79
		2	2	16.0			3	4	40.0

Age at Entry, 69 Years.

Years of Insurance	No. of Entrants, 8.				$26,000 Insured.				Age at Exit
0				4				13	69
1				8				26	70
2				8				26	71
3		1		7.5		5		23.5	72
4		1		6.5		1		20.5	73
5	2	2		5	12	6		17	74
6				2				2	75
7	1			2	1			2	76
8				1				1	77
9				1				1	78
10				1				1	79
11				1				1	80
12				1				1	81
13				1				1	82
14				1				1	83
15				1				1	84
16				1				1	85
17				1				1	86
18				1				1	87
19				1				1	88
20				1				1	89
21			1	1			1	1	90
	3	4	1	57.0	13	12	1	144.0	

Age at Entry, 71 Years.

No. of Entrants, 0. $0,000 Insured.

Age at Entry, 72 Years.

Years of Insurance	No. of Entrants, 2.				$3,000 Insured.				Age at Exit
0				1				1.5	72
1	1			2	1			3	73
2				1				2	74
3			1	1			2	2	75
	1		1	5.0	1		2	8.5	

Age at Entry, 73 Years.

No. of Entrants, 0. $0,000 Insured.

Age at Entry, 74 Years.

Years of Insurance	No. of Entrants, 1.				$1,000 Insured.				Age at Exit
0				.5				.5	74
1		1		.5		1		.5	75
		1		1.0		1		1.0	

Age at Entry, 70 Years.

Years of Insurance	No. of Entrants, 4.				$7,000 Insured.				Age at Exit
0			1	2			1	3.5	70
1		1		2.5		1		5.5	71
2				2				5	72
3				2				5	73
4				2				5	74

TABLE II.

OBSERVATIONS ON FEMALE LIFE.

Age at Entry, 75 Years.

No. of Entrants, 3. — $4,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
0	1			1.5	1			2	75
1				2				3	76
2				2				3	77
3				2				3	78
4		1		1.5		2		2	79
5				1				1	80
6			1	1			1	1	81
	1	1	1	11.0	1	2	1	15.0	

Age at Entry, 76 Years.

No. of Entrants, 1. — $1,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
0				.5				.5	76
1				1				1	77
2				1				1	78
3			1	1			1	1	79
			1	3.5			1	3.5	

Age at Entry, 77 Years.

No. of Entrants, 1. — $2,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
0				.5				1	77
1				1				2	78
2				1				2	79
3				1				2	80
4				1				2	81

Age at Entry, 77 Years.

No. of Entrants, 1. — $2,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
5				1				2	82
6				1				2	83
7				1				2	84
8				1				2	85
9		1		1			2	2	86
		1		9.5			2	19.0	

Ages at Entry, 78 and 79 Years.

No. of Entrants, 0. — $0,000 Insured.

Age at Entry, 80 Years.

No. of Entrants, 1. — $1,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
0				.5				.5	80
1			1	1			1	1	81
			1	1.5			1	1.5	

Age at Entry, 81 Years.

No. of Entrants, 1. — $1,000 Insured.

Years of Insurance	Existing	Discontinued	Died	Exposed to Risk	Existing ($)	Discontinued ($)	Death Claims ($)	Exposed to Risk ($)	Age at Exit
0				.5				.5	81
1			1	1			1	1	82
			1	1.5			1	1.5	

TABLE III.

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MALE LIFE (A). MORTALITY AND DEATH CLAIMS PER CENT. OF THE LIVING OR EXPOSED, BY EXPERIENCE ENDING (1874), AND BY FINAL SERIES: ALSO, AVERAGE SUM INSURED (1874.)

Age at Beginning of Year.	Mortality, Per Cent. (1874.)	Death Claims, Per Cent. (1874.)	Death Claims. Per Cent. Final Series.	Claims. Final Series.	Average Sum Insured (1874.)				Age at Beginning of Year.
					Existing.	Discontinued.	Died.	Exposed.	
				$	$	$	$	$	
10					2,275	1,575		2,080	10
11					1,923	1,619		2,063	11
12	0.333	0.244	0.337	1	2,030	1,679	1,500	2,052	12
13	.457	.268	.266	3	1,898	1,930	1,200	2,048	13
14	.281	.160	.158	4	2,088	1,900	1,167	2,041	14
15	.370	.280	.277	11	1,991	1,901	1,500	1,983	15
16	.577	.450	.445	27	1,868	1,879	1,514	1,939	16
17	.594	.501	.503	48	1,870	1,858	1,625	1,927	17
18	.685	.622	.626	92	1,808	1,844	1,730	1,906	18
19	.813	.741	.740	168	1,797	1,852	1,728	1,895	19
20	.787	.690	.688	247	1,827	1,886	1,701	1,939	20
21	.693	.575	.579	322	1,896	1,959	1,673	2,016	21
22	.705	.620	.626	511	1,950	2,038	1,840	2,093	22
23	.662	.631	.646	729	1,979	2,111	2,063	2,166	23
24	.651	.627	.648	961	2,010	2,212	2,152	2,234	24
25	.674	.657	.674	1,258	2,071	2,292	2,236	2,292	25
26	.674	.662	.680	1,534	2,124	2,361	2,294	2,335	26
27	.701	.679	.705	1,869	2,165	2,413	2,281	2,353	27
28	.684	.688	.712	2,175	2,216	2,423	2,373	2,361	28
29	.644	.676	.686	2,376	2,023	2,465	2,507	2,389	29
30	.669	.690	.706	2,731	2,052	2,539	2,530	2,451	30
31	.692	.692	.664	3,093	2,318	2,598	2,502	2,502	31
32	.690	.704	.687	3,424	2,352	2,628	2,570	2,519	32
33	.730	.767	.806	3,926	2,355	2,651	2,667	2,538	33
34	.749	.790	.849	4,403	2,418	2,680	2,699	2,557	34
35	.738	.786	.828	4,525	2,486	2,687	2,740	2,575	35
36	.759	.862	.861	4,899	2,503	2,734	2,943	2,591	36
37	.813	.913	.921	5,432	2,469	2,786	2,921	2,600	37
38	.847	.901	.918	5,573	2,458	2,795	2,783	2,615	38
39	.855	.898	.940	5,827	2,502	2,828	2,770	2,639	39
40	.881	.924	.975	6,137	2,514	2,825	2,796	2,663	40
41	.910	.968	.974	6,145	2,513	2,881	2,866	2,694	41
42	.957	.978	.984	6,219	2,561	2,952	2,787	2,729	42
43	1.015	1.014	1.085	6,871	2,597	2,942	2,755	2,757	43
44	.986	.989	1.080	6,750	2,610	2,977	2,791	2,783	44
45	.996	1.024	1.066	6,537	2,641	3,017	2,890	2,811	45
46	1.092	1.130	1.184	7,178	2,675	3,046	2,943	2,843	46
47	1.146	1.182	1.260	7,547	2,712	3,140	2,968	2,877	47
48	1.151	1.214	1.232	7,120	2,740	3,149	3,065	2,907	48
49	1.192	1.230	1.270	7,107	2,764	3,100	3,031	2,937	49

NOTE. The Percentages by Lives and by Amounts (1874) were found from the sum or mean of data at two adjacent Ages in Table I (A). The Final Series Percentages depend on the factor of Table III (C) discounted at 4 per cent. *per annum*, and applied to Death Claims and Exposed in Table I. By (1874) is meant the experience from organization to the year 1874. To the fifth column annex ,000.

TABLE III.

MALE LIFE (A). MORTALITY AND DEATH CLAIMS PER CENT. OF THE LIVING OR EXPOSED, BY EXPERIENCE ENDING (1874), AND BY FINAL SERIES; ALSO, AVERAGE SUM INSURED (1874.)

Age at Beginning of Year.	Mortality, Per Cent. (1874.)	Death Claims, Per Cent. (1874.)	Death Claims, Per Cent. Final Series.	Claims, Final Series.	Average Sum Insured (1874.)				Age at Beginning of Year.
					Existing.	Discontinued.	Died.	Exposed.	
				$	$	$	$	$	
50	1.305	1.324	1.440	7,946	2,796	3,101	3,010	2,968	50
51	1.377	1.422	1.554	8,403	2,835	3,265	3,091	2,993	51
52	1.416	1.477	1.564	7,997	2,840	3,305	3,137	3,008	52
53	1.482	1.508	1.571	7,577	2,860	3,407	3,070	3,018	53
54	1.619	1.672	1.750	8,018	2,955	3,524	3,126	3,027	54
55	1.732	1.826	1.830	7,685	2,998	3,449	3,190	3,026	55
56	1.799	1.922	1.848	7,222	2,975	3,423	3,234	3,026	56
57	1.916	2.028	1.988	7,301	2,938	3,510	3,207	3,030	57
58	2.067	2.129	2.108	6,950	2,935	3,535	3,123	3,033	58
59	2.338	2.332	2.326	7,073	2,999	3,563	3,027	3,036	59
60	2.566	2.596	2.569	7,327	3,059	3,603	3,062	3,027	60
61	2.557	2.705	2.578	6,654	2,993	3,606	3,181	3,008	61
62	2.673	2.840	2.823	6,413	2,960	3,699	3,183	2,995	62
63	2.981	3.132	3.429	6,899	2,983	3,788	3,128	2,978	63
64	3.258	3.610	4.014	7,362	2,910	3,493	3,268	2,950	64
65	3.588	4.061	4.243	6,908	2,932	3,429	3,312	2,927	65
66	3.662	3.766	4.020	5,399	2,860	3,594	2,966	2,884	66
67	3.852	4.092	4.421	5,096	2,856	3,533	3,032	2,854	67
68	4.499	4.607	4.734	4,974	3,032	3,686	2,882	2,814	68
69	4.982	4.980	5.101	4,491	2,960	3,400	2,731	2,732	69
70	5.063	5.199	5.753	4,293	2,740	3,344	2,728	2,657	70
71	5.475	5.435	5.934	3,832	2,796	2,875	2,596	2,615	71
72	6.066	6.016	6.062	3,275	2,695	2,542	2,550	2,572	72
73	6.073	5.694	6.257	2,849	2,444	2,727	2,382	2,540	73
74	6.554	5.814	7.069	2,640	2,591	2,500	2,279	2,569	74
75	6.993	6.504	7.174	2,185	3,046	1,778	2,407	2,588	75
76	8.567	7.136	6.726	1,671	3,211	1,824	2,103	2,524	76
77	10.548	8.420	8.686	1,712	2,961	2,000	1,960	2,456	77
78	10.607	10.758	11.159	1,633	2,456	2,000	2,474	2,439	78
79	9.285	10.362	11.505	1,137	2,500	2,077	2,720	2,437	79
80	9.738	8.968	11.406	688	2,776	2,222	2,205	2,394	80
81	13.565	11.070	13.608	526	2,795	2,200	1,897	2,325	81
82	14.141	12.747	18.352	502	3,179	2,143	2,071	2,298	82
83	10.108	10.982	15.705	230	3,600	1,000	2,357	2,170	83
84	12.093	11.401	20.479	182	2,667	1,667	1,846	1,958	84
85	14.286	15.493	36.489	238	2,600	2,000	2,000	1,844	85
86	18.000	20.253	44.465	173	3,250		1,778	1,580	86
87	16.000	13.861	47.876	83	1,600		1,167	1,347	87
88	18.182	24.658	31.326	28	1,200		1,800	1,327	88
89	28.571	41.860	43.678	8	1,000	1,000	1,800	1,229	89
All Ages	1.0280	1.0959			2,520	2,711	2,832	2,656	

TABLE III. 161

MALE LIFE (B). ANNUAL MORTALITY AND DISCONTINUED PER CENT. OF THE EX-
POSED, ACCORDING TO YEARS OF INSURANCE. ALSO, AVERAGE SUM INSURED.

Years of Insurance.	Mortality Per Cent. (1874.)		Discontinued Per Cent. (1874.)		D. and Dis. Per Cent. (1874.)	Average Sum Insured. (1874.)				Years of Insurance.
	By Lives.	By Am'ts.	By Lives.	By Am'ts.	By Am'ts.	Existing.	Discontinued.	Died.	Exposed.	
						$	$	$	$	
0	.629	.631	9.576	7.764	8.346	2,558	2,119	2,646	2,639	0
1	.810	.856	18.255	16.470	17.191	2,595	2,385	2,821	2,670	1
2	.921	.996	10.383	11.798	12.680	2,296	3,077	2,907	2,689	2
3	1.000	1.061	8.396	9.833	10.793	2,354	3,160	2,841	2,678	3
4	1.091	1.187	6.969	8.371	9.462	2,406	3,224	2,901	2,666	4
5	1.136	1.226	6.076	7.405	8.542	2,614	3,258	2,867	2,656	5
6	1.168	1.273	5.019	5.983	7.181	2,613	3,143	2,860	2,625	6
7	1.225	1.338	5.397	5.483	6.748	2,601	2,647	2,846	2,606	7
8	1.196	1.266	3.446	3.887	5.104	2,626	2,934	2,746	2,596	8
9	1.231	1.255	2.933	3.150	4.366	2,494	2,766	2,623	2,572	9
10	1.273	1.309	2.760	2.977	4.247	2,405	2,799	2,667	2,593	10
11	1.336	1.447	2.405	2.466	3.877	2,432	2,714	2,867	2,647	11
12	1.491	1.544	1.909	2.004	3.517	2,598	2,830	2,790	2,695	12
13	1.406	1.475	1.586	1.732	3.181	2,820	2,952	2,836	2,703	13
14	1.464	1.500	1.789	1.885	3.358	2,748	2,829	2,751	2,684	14
15	1.477	1.497	1.128	1.171	2.651	2,735	2,773	2,707	2,671	15
16	1.727	1.945	1.128	1.193	3.115	2,764	2,812	2,995	2,660	16
17	1.716	1.838	.889	.988	2.808	2,456	2,933	2,828	2,640	17
18	1.664	2.001	.880	.825	2.809	2,608	2,484	3,191	2,655	18
19	1.923	1.814	.791	.782	2.582	2,842	2,621	2,502	2,651	19
20	1.934	2.061	.792	.922	2.964	2,713	3,064	2,807	2,634	20
21	2.162	2.365	.769	.807	3.153	2,631	2,747	2,866	2,620	21
22	2.460	2.877	.698	.799	3.654	2,482	2,987	3,055	2,612	22
23	2.670	3.010	.630	.729	3.718	2,460	3,016	2,942	2,610	23
24	2.751	2.905	.447	.399	3.293	2,326	2,343	2,775	2,628	24
25	2.799	3.229	.439	.354	3.572	2,404	2,208	3,161	2,740	25
26	3.078	3.311	.830	.866	4.148	2,883	3,036	3,133	2,913	26
27	2.892	2.949	.542	.427	3.363	3,052	2,300	2,982	2,925	27
28	3.543	3.394	.696	.374	3.755	2,979	1,500	2,677	2,795	28
29	2.692	1.565	1.355	1.772	3.309	2,397	3,400	1,500	2,580	29
30	4.720	6.452	.602	.643	7.054	2,805	3,000	3,875	2,835	30
31	....	....	....	....	....	....	....	....	2,286	31
32	14.286	6.250	....	....	6.250	....	....	1,000	2,286	32
33	16.667	33.333	....	....	33.333	....	....	5,000	2,500	33
34	25.000	21.053	44.444	11.111	30.000	....	500	2,000	2,375	34
35	....	....	....	....	....	....	....	....	3,500	35
36	....	....	....	....	....	....	....	....	3,500	36
37	....	....	....	....	....	....	....	...	3,500	37
38	50.000	28.571	....	....	28.571	....	....	2,000	3,500	38
39	100.000	100.000	....	....	100.000	....	....	5,000	5,000	39
Total	1.028	1.096	9.114	9.297	10.293	2,520	2,711	2,832	2,656	

TABLE III.

MALE LIFE (C). LOGARITHM OF THE MULTIPLIER (*w*) TO CARRY FORWARD THE
AMOUNTS EXISTING TO THEIR PROPORTIONAL TERMINATIONS INCLUSIVE
IN THE FOLLOWING COLUMNS OF TABLE I, THAT IS, TO
FINAL SERIES.

Years of Insurance.	AGES OF ENTRY.								Years of Insurance.
	16 to 19	20, 21	22, 23	24, 25	26, 27	28, 29	30, 31	32, 33	
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0
1	.03167	.03251	.03076	.03125	.02975	.02950	.02886	.02756	1
2	.06848	.07103	.06595	.06651	.06416	.06304	.06108	.05870	2
3	.11133	.11282	.10211	.10598	.09944	.09678	.09379	.09200	3
4	.15424	.15897	.14333	.14795	.14100	.13500	.13075	.12865	4
5	0.21081	0.22007	0.20526	0.20511	0.19508	0.18536	0.17896	0.17856	5
6	.29608	.30419	.28311	.27934	.26141	.24597	.24303	.24077	6
7	.42017	.41418	.38348	.37144	.34663	.32425	.32288	.31871	7
8	.56518	.56338	.49498	.48051	.44877	.42394	.41637	.41552	8
9	.72039	.72029	.63628	.60940	.56752	.53940	.52961	.53480	9
10	0.90595	0.88140	0.76332	0.73569	0.68621	0.65580	0.64871	0.65832	10
11	1.03608	.98935	.88288	.85079	.78971	.76447	.75669	.76347	11
12	.13428	1.06705	.96695	.93098	.87108	.85081	.84310	.84680	12
13	.18797	.11745	1.02247	.98875	.91419	.90053	.89185	.89522	13
14	.24499	.17096	.07471	1.04638	.96450	.94898	.94126	.93814	14
15	1.29687	1.22848	1.14839	1.10994	1.03495	1.01171	1.00502	0.99613	15
16	.34188	.30143	.20883	.17915	.09429	.06871	.06272	1.04468	16
17	.38040	.39219	.27406	.24687	.13776	.11044	.11365	.08012	17
18	.40808	.45412	.33330	.30876	.18436	.15738	.15951	.11317	18
19	.44173	.49038	.39645	.35785	.22871	.20863	.20061	.16153	19
20			1.44609	1.42734	1.28963	1.26198	1.23978	1.20003	20
21			.52848	.47540	.33599	.29878	.28672	.25242	21
22			.56209	.52180	.37204	.33082	.32485	.28933	22
23			.59941	.57132	.41461	.37611	.36530	.32815	23
24			.77465	.68447	.48049	.44200	.45187	.38124	24

	34, 35	36, 37	38, 39	40, 41	42, 43	44, 45	46, 47	48, 49	
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0
1	.02736	.02797	.02612	.02682	.02637	.02667	.02592	.02522	1
2	.05863	.05861	.05685	.05787	.05685	.05506	.05485	.05414	2
3	.09011	.09003	.08992	.08450	.08871	.08557	.08437	.18785	3
4	.12711	.12451	.12542	.11724	.12499	.12342	.12055	.12281	4
5	0.17563	0.17178	0.17432	0.16137	0.17407	0.17291	0.16813	0.16904	5
6	.24009	.23623	.23728	.23311	.23927	.23703	.23415	.24216	6
7	.32266	.31900	.32222	.32714	.32248	.33015	.32644	.34079	7
8	.42283	.42148	.43019	.43705	.43852	.44456	.44387	.46653	8
9	.53758	.54528	.55948	.57120	.56882	.57546	.61384	.63870	9
10	0.65714	0.66750	0.68624	0.69490	0.70469	0.70987	0.76135	0.77771	10
11	.76034	.77463	.79305	.81533	.81133	.82799	.89096	.88884	11
12	.83609	.86817	.87863	.91130	.91464	.92110	.98369	.99857	12
13	.89591	.92046	.93184	.96849	.97285	.98229	1.05109	1.05690	13
14	.94054	.96708	.98309	1.02026	1.02834	1.03559	.09971	.10516	14

TABLE III. 163

MALE LIFE (C.) LOGARITHM OF THE MULTIPLIER (w) TO CARRY FORWARD THE
AMOUNTS EXISTING TO THEIR PROPORTIONAL TERMINATION INCLUSIVE
IN THE FOLLOWING COLUMNS OF TABLE I, THAT IS, TO
FINAL SERIES.

Years of Insurance	AGES OF ENTRY.								Years of Insurance
	34, 35	36, 37	38, 39	40, 41	42, 43	44, 45	46, 47	48, 49	
15	0.99234	1.02716	1.05255	1.09514	1.08940	1.09572	1.15306	1.17165	15
16	1.04190	.08194	.10557	.15674	.13412	.14549	.20908	.24176	16
17	.08799	.13401	.15389	20898	.17147	.18669	.24690	.29332	17
18	.12433	.16757	.19163	.24450	.21191	.21942	.28698	.32466	18
19	.16214	.20506	.23491	.28703	.25451	.25687	.33896	.37522	19
20	1.20632	1.25361	1.27022	1.32455	1.28544	1.28311	1.39109	1.40787	20
21	.23740	.29230	.30026	.35877	.31108	.31230	.41859	.44997	21
22	.27625	.32312	.33458	.39109	.34072	.35177	.46206	.48151	22
23	.30803	.35808	.38224	.43614	.37225	.38598	.52132	.53881	23
24	.37613	.41130	.42984	.49325	.46483	.48744	.59343	.60108	24
25	1.47904	1.49640	1.53001	1.58489	1.63230	1.64291	1.71368	1.76675	25
26	.62925	.65588	.67472	.76986	.81786	.83406	.87907	.87790	26
27	.94425	.85502	.91484	.96749	2.03817	2.03844	2.16395	2.13867	27
28	2.28653	2.21526	2.24928	2.26639	.47507	.47829	.50773	.26995	28

	50, 51	52, 53	54, 55	56, 57	58, 59	60, 61	62, 63	64, 65	
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0
1	.02578	.02589	.03195	.03235	.02877	.02832	.03272	.02596	1
2	.05292	.05435	.06092	.05647	.05943	.05577	.06376	.04455	2
3	.08601	.08721	.09767	.09116	.09101	.09351	.10001	.07247	3
4	.12422	.12676	.13934	.13230	.13035	.13840	.12885	.10867	4
5	0.18118	0.18340	0.19199	0.18767	0.19541	0.19452	0.20007	0.17234	5
6	.26561	.26048	.27789	.27283	.29568	.27301	.28121	.26813	6
7	.36828	.36581	.38372	.38968	.40959	.40603	.42073	.37843	7
8	.51439	.50572	.52739	.54590	.56757	.55388	.65071	.54104	8
9	.66341	.67694	.68911	.72297	.74676	.74438	.83539	.82438	9
10	0.80739	0.83452	0.85481	0.89414	0.90593	0.88890	0.97509	1.03826	10
11	.92290	.95311	.98318	1.01557	1.07042	1.00005	1.07081	.19434	11
12	1.00623	1.05377	1.08678	.10290	.19273	.12747	.13848	.19434	12
13	.06246	.09947	.14336	.17348	.26270	.17079	.18068	.20835	13
14	.12941	.15676	.20055	.25364	.35345	.20889	.28163	.23468	14
15	1.20760	1.20986	1.26238	1.32928	1.51441	1.25803	1.29866	1.25587	15
16	.28547	.27998	.33082	.37798	.54211	.29116	.35042	.25587	16
17	.33760	.35163	.37702	.45536	.57575	.32190	.41536	.27011	17
18	.39651	.40659	.43473	.50500	.60526	.35842	.42304	.27011	18
29	.45631	.44707	.46092	.53992	.62313	.35842	.52626	.27011	19
20	1.48627	1.50172	1.50610	1.55195	1.66091	1.35842	1.55182	1.27011	20
21	.53167	.52717	.57961	.61034	.66091	.38443	.60981	.47423	21
22	.55351	.54756	.60488	.65609	.72603	.44570	.65903	.47423	22
23	.61165	.58759	.63576	.69605	.78501	.45300	.79733	.47423	23
24	.68100	.66743	.72109	.75003	2.00995	.61650	.79733		24

TABLE IV.

FEMALE LIFE (A). MORTALITY AND DEATH CLAIMS PER CENT. OF THE LIVING OR EXPOSED, BY EXPERIENCE ENDING (1874), AND BY FINAL SERIES. ALSO AVERAGE SUM INSURED (1874).

Age at Begin- ning of Year.	Mortality. Per Cent. (1874.)	Death Claims. Per Cent. (1874.)	Death Claims. Per Cent. Final Se- ries.	Average Sum Insured (1874)				Age at Begin- ning of Year.
				Existing.	Discontin- ued.	Died.	Exposed.	
				$	$	$	$	
10	1.639	1.111		2,800	1,143	1,000	1,475	10
11	1.047	.671		3,571	1,143	1,000	1,560	11
12	....	....		4,125	769	....	1,663	12
13	1.072	1.003		2,500	1,385	1,500	1,603	13
14	.668	.654		1,933	1,372	1,500	1,531	14
15	.213	.141		1,444	1,197	1,000	1,514	15
16	.448	.290		1,207	1,270	1,000	1,546	16
17	1.071	1.099	.754	1,333	1,249	1,700	1,657	17
18	.822	.869	(.671)	1,485	1,733	1,818	1,720	18
19	.519	.575	[.757]	1,552	1,797	1,900	1,715	19
20	1.007	.906		1,554	1,679	1,556	1,729	20
21	1.011	.899		1,522	1,783	1,556	1,749	21
22	.965	1.136	1.013	1,608	1,854	2.068	1,758	22
23	1.109	1.104	(.999)	1,555	1,867	1,758	1,767	23
24	.990	.720	[.850]	1,545	1,858	1,323	1,821	24
25	1.007	.929		1,579	1,920	1,737	1,883	25
26	1.139	1.291		1,563	2,016	2,165	1,910	26
27	1.046	1.134	1.160	1,582	2,108	2,081	1,918	27
28	.904	1.026	(1.065)	1,581	2,164	2,181	1,923	28
29	.919	1.069	[1.182]	1,633	2,176	2,252	1,937	29
30	1.009	1.131		1,696	2,126	2,200	1,964	30
31	1.028	1.059		1,697	2,186	2,055	1,996	31
32	1.119	1.046	1.108	1,643	2,324	1,882	2,013	32
33	1.126	1.136	(1.084)	1,660	2,352	2,027	2,009	33
34	1.069	1.102	[1.133]	1,749	2,359	2,070	2,007	34
35	1.068	1.160		1,785	2,425	2,176	2,003	35
36	.958	1.092		1,840	2,452	2,252	1,977	36
37	.951	1.079	1.127	1,793	2,338	2,208	1,945	37
38	.977	1.040	(1.082)	1,712	2,213	2,071	1,946	38
39	.944	.815	[1.207]	1,773	2,302	1,697	1,968	39
40	.970	.857		1,748	2,495	1,740	1,968	40
41	1.012	1.067		1,723	2,417	2,076	1,969	41
42	1.095	1.232	1.163	1,700	2,366	2,225	1,978	42
43	1.157	1.383	(1.104)	1,749	2,482	2,375	1,987	43
44	1.172	1.360	[1.285]	1,853	2,507	2,296	1,978	44
45	1.085	1.088		1,796	2,358	1,960	1,955	45
46	.981	.946		1,857	2,335	1,884	1,953	46
47	1.011	.989	1.049	1,935	2,388	1,904	1,946	47
48	.995	1.094	(1.103)	1,868	2,261	2,130	1,936	48
49	1.040	1.192	[1.391]	1,837	2,207	2,227	1,943	49

NOTE. The percentages by Mortality and by Death Claims were derived from the sum or mean of data at two adjacent Ages in Table II (A). The quinquennial percentages (Final Series) depend on *w . v*" from Table IV (C) applied to Death Claims and Exposed to Risk in Table II. Under these and

TABLE IV.

FEMALE LIFE (A). MORTALITY AND DEATH CLAIMS PER CENT. OF THE LIVING OR EXPOSED, BY EXPERIENCE ENDING (1874), AND BY FINAL SERIES. ALSO AVERAGE SUM INSURED (1874).

Age at Beginning of Year.	Mortality. Per Cent. (1874.)	Death Claims. Per Cent. (1874.)	Death Claims, Per Cent. Final Series.	Average Sum Insured (1874).				Age at Beginning of Year.
				Existing.	Discontinued.	Died.	Exposed.	
				$	$	$	$	
50	1.171	1.252		1,825	2,346	2,078	1,945	50
51	1.251	1.287		1,759	2,504	1,987	1,932	51
52	1.500	1.480	1.310	1,770	2,483	1,902	1,928	52
53	1.451	1.633	(1.432)	1,838	2,556	2,169	1,927	53
54	1.180	1.443	[1.567]	1,846	2,654	2,333	1,908	54
55	1.577	1.610		1,802	2,517	1,933	1,894	55
56	2.081	2.245		1,800	2,329	2,058	1,908	56
57	2.169	2.719	1.959	1,750	2,282	2,429	1,938	57
58	1.854	2.002	(2.015)	1,796	2,172	2,128	1,971	58
59	1.721	1.757	[2.015]	1,942	2,194	2,026	1,985	59
60	1.773	2.306		1,893	2,581	2,543	1,955	60
61	1.866	2.277		1,898	2,741	2,344	1,921	61
62	2.266	2.569	2.687	1,792	2,454	2,151	1,898	62
63	2.880	3.131	(2.822)	1,712	2,032	2,083	1,916	63
64	3.868	4.023	[2.863]	1,914	1,769	2,049	1,970	64
65	3.348	3.421		2,130	1,889	2,033	1,990	65
66	3.237	4.340		2,078	2,089	2,625	1,958	66
67	4.024	6.409	4.357	1,750	2,039	3,000	1,884	67
68	5.134	6.496	(4.937)	1,529	2,042	2,333	1,844	68
69	5.674	5.961	[4.370]	1,607	2,077	2,000	1,904	69
70	3.697	4.664		1,515	1,400	2,500	1,981	70
71	3.563	5.495		1,750	2,143	3,125	2,027	71
72	4.167	5.989	5.250	1,773	2,167	2,875	2,000	72
73	4.459	4.831	(5.617)	1,864	2,000	2,143	1,978	73
74	8.907	8.696	[6.844]	2,071	2,571	1,909	1,956	74
75	10.309	11.475		1,300	2,250	2,100	1,887	75
76	9.032	8.108		1,333	1,000	1,714	1,910	76
77	16.000	13.492	14.776	1.600	....	1,700	2,016	77
78	19.149	16.915	(12.232)	2,250	1,500	1,889	3,138	78
79	15.385	3.889	[10.662]	3,250	1,500	2,000	2,215	79
80	25.000	20.408		3,500		1,667	2,042	80
81	40.000	32.836		....		1,571	1,914	81
82	18.182	30.435		....		3,500	2,091	82
83	11.111	37.500	(22.01)	1,000		6,000	1,778	83
84	....	....	[12.51]	1,000		....	1,286	84
85	16.667	25.000		....		2,000	1,333	85
86	20.000	33.333		....		2,000	1,200	86
87	....	....		1,000		. ..	1,000	87
88	....	....	(21.43)	1,000		....	1,000	88
89	50.000	50.000	[22.82]	....		1,000	1,000	89
All Ages.	1.1581	1.2344	•	1,744	2,216	2,070	1,942	

enclosed in parentheses are the quinquennial values from the preceding column or from Death Claims (1874). And the values in brackets are the quinquennial ratios from the Female Experience of the Twenty British Offices.

TABLE IV.

FEMALE LIFE (B) ANNUAL MORTALITY AND DISCONTINUED PER CENT. OF THE EXPOSED ACCORDING TO YEARS OF INSURANCE. ALSO, AVERAGE SUM INSURED.

Years of Insurance.	Mortality Per Cent. (1874.)		Discontinued Per Cent. (1874.)		D. and Dis. Per Cent. (1874.)	Average Sum Insured. (1874.)				Years of Insurance.
	By Lives.	By Am'ts.	By Lives.	By Am'ts.	By Am'ts.	Existing.	Discontinued.	Died.	Exposed.	
					$	$	$	$	$	
0	.861	.934	9.146	7.716	8.579	1,790	1,665	2,158	1,989	0
1	1.081	1.120	20.576	19.700	20.610	1,782	1,914	2,082	2,010	1
2	1.062	1.088	11.549	14.037	14.978	1,708	2,476	2,061	2,010	2
3	1.139	1.274	10.633	14.148	15.248	1,622	2,672	2,206	1,973	3
4	1.156	1.321	8.781	12.083	13.250	1,688	2,701	2,206	1,930	4
5	1.280	1.434	7.210	10.566	11.853	1,685	2,821	2,121	1,893	5
6	1.401	1.541	5.561	7.282	8.713	1,776	2,476	2,063	1,875	6
7	1.331	1.353	6.955	8.636	9.875	1,830	2,335	1,895	1,864	7
8	1.064	1.159	4.504	6.270	7.358	1,854	2,578	2,000	1,836	8
9	1.726	1.541	4.226	4.923	6.390	1,718	2,097	1,600	1,792	9
10	1.382	1.359	3.892	4.896	6.190	1,685	2,286	1,778	1,808	10
11	1.494	1.598	3.365	3.316	4.861	1,952	1,800	1,955	1,828	11
12	1.329	1.197	2.397	2.516	3.684	1,869	1,897	1,625	1,804	12
13	1.538	2.110	1.269	1.362	3.443	2,419	1,928	2,471	1,801	13
14	1.056	.921	1.628	1.512	2.419	2,463	1,647	1,545	1,772	14
15	1.143	1.796	1.247	1.440	3.210	1,978	2,000	2,727	1,736	15
16	1.672	2.742	.672	.922	3.639	2,649	2,333	2,800	1,708	16
17	1.314	1.455	1.195	1.527	2.960	1,906	2,100	1,818	1,642	17
18	2.171	1.646	1.538	1.100	2.728	2,077	1,167	1,235	1,630	18
19	1.509	1.605	1.373	1.689	3.266	1,815	2,000	1,727	1,624	19
20	1.901	2.813	.589	.734	3.526	1,756	2,000	2,385	1,611	20
21	2.875	2.833	.646	1.325	4.121	1,511	3,250	1,556	1,579	21
22	.897	.568	1.253	1.358	1.919	1,633	1,714	1,000	1,578	22
23	2.459	1.949	.414	.393	2.335	1,434	1,500	1,250	1,577	23
24	3.121	3.293	.288	.352	3.633	1,633	2,000	1,727	1,637	24
25	1.031	.631			.631	1,615		1,000	1,634	25
26						1,593			1,686	26
27						2,500			2,182	27
28						1,500			1,333	28
29						....			1,000	29
30						1,000			1,000	30
	1.158	1.234	10.954	12.412	13.499	1,744	2,216	2,070	1,942	

TABLE IV.

FEMALE LIFE (C.) LOGARITHM OF THE AVERAGE FACTORS (w), (wv^n), TO CARRY FORWARD THE AMOUNTS EXISTING IN TABLE II TO THEIR PROPORTIONAL TERMINATIONS INCLUSIVE IN THE FOLLOWING COLUMNS, $i.\ e.$ TO FINAL SERIES.

Years of Insurance. $n.$	Log w.	Log$(w.v^n)$	Years. $n.$	Log w.	Log$(w.v^n)$	Years. $n.$	Log w.	Log$(w.v^n)$
0	0.00000	0.00000	10	0.86339	0.69306	20	1.21692	0.87625
1	.02133	.00430	11	.95711	.76974	21	.24727	.88957
2	.04603	.01196	12	1.03036	.82596	22	.27938	.90465
3	.08533	.03423	13	.05439	.83296	23	.33135	.93958
4	.12601	.05788	14	.07156	.83309	24	.44621	1.03741
5	0.18963	0.10446	15	1.10460	·0.84910	25	1.69101	1.26518
6	.27044	.16824	16	.12902	.85649			
7	.38586	.26663	17	.15871	.86914			
8	.54308	.40681	18	.17888	.87228	$v = \dfrac{1}{1.04}$		
9	.72467	.57137	19	.19810	.87447			

TABLE V. 167

PROBABLE LOSS AND ACTUAL LOSS BY STATES AND TERRITORIES.

States, &c.	Probable Loss.	Actual Loss.	Ratio.
Alabama	$1,204,521	$1,618,048	100:134
Arizona	2,230	5,000	224
Arkansas	295,413	508,119	172
California	2,489,469	2,414,340	97
Colorado	150,821	131,000	87
Connecticut	3,604,783	3,369,951	94
Dakota	5,412	5,000	92
Delaware	253,963	224,526	88
District of Columbia	580,298	660,006	114
Florida	181,635	303,852	167
Georgia	950,653	911,536	96
Idaho	23,532	15,743	67
Illinois	7,320,753	6,365,344	87
Indiana	2,465,769	2,590,728	105
Indian Territory	10,007	5,000	50
Iowa	1,659,034	1,255,512	76
Kansas	454,910	391,470	86
Kentucky	2,169,340	2,237,220	103
Louisiana	1,363,520	2,400,915	176
Maine	1,826,915	1,511,492	83
Maryland	2,573,670	3,311,815	129
Massachusetts	11,977,364	10,309,004	86
Michigan	2,371,856	2,119,010	89
Minnesota	735,380	785,907	107
Mississippi	795,476	1,308,632	164
Missouri	4,336,484	4,810,720	111
Montana	21,824	5,000	23
Nebraska	223,736	136,300	61
Nevada	157,256	177,905	113
New Hampshire	1,264,848	1,123,093	89
New Jersey	2,666,988	2,515,832	94
New Mexico	17,778	29,500	166
New York	22,271,323	21,059,726	95
North Carolina	843,815	1,069,409	127
Ohio	5,689,260	5,292,302	93
Oregon	164,380	141,000	86
Pennsylvania	10,393,537	9,578,003	92
Rhode Island	1,058,688	945,152	89
South Carolina	753,060	864,635	115
Tennessee	1,383,648	2,262,121	163
Texas	778,713	1,358,972	175
Utah	14,328	39,500	276
Vermont	723,750	578,092	80
Virginia	646,188	673,350	104
Washington	23,270	6,000	...
West Virginia	314,438	255,755	81
Wisconsin	3,009,760	2,316,213	77
Wyoming	4,022	1,000	...
Unknown	37,337	67,818	182
British America	1,425,150	1,033,812	73
Other Foreign	841,215	948,616	113
Total	$104,531,520	$102,048,996	98

NOTE. Tables V, VI and VII refer to the common American Table of 1858. To change to the Thirty Offices Table, subtract $\frac{1}{30}$th part from the Probable Loss. Or add $\frac{1}{29}$th to the last term of the Ratio.

TABLE VI.

ORDER AND VARIABILITY OF RATIOS OF PROBABLE TO ACTUAL LOSS IN THIRTY-FIVE STATES.

States and District.	Ratios.				Thousand Dollars Loss.					
	Number of Companies.				12		6		9	
	27	12	6	9	Prob. L.	Act. L.	Prob. L.	Act. L.	Prob. L.	Act. L.
Iowa.............	100 : 76	62	94	80	870	538	611	575	177	143
Wisconsin	77	74	88	81	2,122	1,559	530	468	358	289
Vermont...........	80	78	81	82	305	236	288	234	131	107
West Virginia.......	81	58	100	93	108	63	23	23	184	170
Maine.............	83	93	78	83	512	475	1,113	870	202	167
Oregon.....	86	102	103	50	72	74	40	42	52	26
Kansas........... ..	86	68	112	92	218	149	124	139	113	103
Massachusetts........	86	80	88	95	3,654	2,934	7,244	6,346	1,080	1,029
Illinois.............	87	81	86	98	2,776	2,259	2,823	2,427	1,722	1,680
Delaware	88	..	109	104	43	1	80	87	132	137
Rhode Island........	89	77	98	84	316	242	587	572	156	131
Michigan ....·...	89	96	84	93	686	657	1,203	1,012	484	450
New Hampshire.....	89	81	92	91	377	307	742	683	146	134
Pennsylvania.......	92	82	95	97	3,030	2,472	3,018	2,872	4,346	4,234
Ohio..............	93	83	97	102	2,107	1,746	2,229	2,169	1,354	377
Connecticut.........	94	73	104	104	1,234	905	1,683	1,751	687	714
New Jersey..........	94	78	111	105	1,185	921	598	663	885	932
New York..........	95	90	98	98	9,071	8,126	7,690	7,515	5,510	5,419
Georgia............	96	89	118	96	353	314	117	137	481	460
California..........	97	96	105	88	959	920	880	923	651	571
Kentucky......·....	103	106	81	123	701	743	736	595	733	900
Virginia...........	104	86	100	130	309	265	97	97	241	312
Indiana............	105	104	99	116	1,045	1,088	855	846	565	657
Minnesota..........	107	114	94	92	469	537	144	136	122	113
Missouri...........	111	96	121	122	1,835	1,768	906	1,101	1,595	1,942
District of Columbia.	114	95	124	141	280	266	173	214	127	179
South Carolina......	115	123	71	113	499	615	91	65	163	185
North Carolina......	127	103	105	163	306	315	214	225	324	529
Maryland...	129	137	131	119	847	1,161	746	979	981	1,171
Alabama...........	134	108	148	156	531	571	70	104	603	943
Tennessee..........	163	156	123	179	498	777	176	218	710	1,268
Mississippi.........	164	121	43	203	310	376	33	14	453	918
Florida............	167	120	357	219	120	145	18	63	44	97
Arkansas.	172	230	180	117	141	324	6	10	149	174
Texas.......	175	170	192	177	256	434	35	67	488	857
Louisiana..........	176	119	218	211	525	625	43	93	796	1,683
Average......	98	90	96	111	1,074	970	999	954	749	838

TABLE VII. 169

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF ALABAMA.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Antauga ..	$3,403	5,220	Lowndes ..	18,785	17,720
Baker ..	219	....	Macon ..	18,814	25,820
Baldwin .	1,952	....	Madison	26,163	44,600
Barbour ...	22,093	10,220	Marengo..	25,991	21,000
Bibb ..	1,882	5,220	Marion	535	....
Blount	198	....	Mobile.	394,284	544,453
Bullock ..	11,868	18,440	Monroe ...	3,782	5,220
Butler ...	12,833	20,880	Montgomery ..	94,225	171,574
Calhoun	7,739	15,420	Morgan	2,763	1,000
Chambers	16,168	20,880	Perry ..	63,414	63,260
Cherokee	528	....	Pickens ..	19,328	39,000
Choctaw ...	4,220	....	Pike ...	2,091	....
Clarke ...	985	....	Randolph	1,236	....
Clay	1,169	....	Russell ..	6,529	30,440
Coffee ...	552	....	Shelby	4,831	6,500
Colbert	3,029	10,440	St. Clair	2,685	5,220
Conecuh ...	1,831	5,000	Sumpter ..	14,185	10,000
Coosa	1,291	....	Talladega	18,576	19,100
Covington ...	19	....	Tallapoosa	3,169	....
Crenshaw ...	2,049	....	Tuscaloosa	18,138	5,000
Dale ...	1,389	...	Walker	411	5,000
Dallas ..	114,320	151,700	Washington ...	1,581	10,220
Elmore	7,586	2,500	Wilcox ..	28,311	33,000
Escambia ...	227	...	Unknown	6,085	15,000
Etowah	2,596	....	Additional	103,216	134,941
Fayette	597	....	Total	1,204,521	1,618,048
Franklin	3,575	...	Ratio	100	: 134
Greene ..	37,285	79,140			
Hale ..	7,901	6,000			
Henry ...	2,895	....	Alluvial.	396,236	544,453
Jackson	1,065	....	Ratio	100	: 137
Jefferson	6,371	10,440	Middle ..	175,977	194,580
Lauderdale	4,616	10,440	Ratio	100	:111
Lawrence	11,310	5,220	Upland	523,007	729,074
Lee	22,109	27,600	Ratio	100	: 139
Limestone	7,523	5,220			

STATE OF ARKANSAS.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Arkansas .	$3,270	15,660	Crittenden .	5,901	16,630
Ashley .	995	5,000	Cross .	837	....
Benton	411	....	Dallas ...	3,457	10,000
Bradley ...	1,656	....	Desha .	3,625	13,220
Calhoun ...	1,169	....	Drew .	5,876	15,660
Carroll	95	....	Franklin	197	5,000
Chicot .	4,588	5,220	Fulton	334	2,500
Clarke	2,390	....	Grant ...	496	....
Columbia ...	2,071	5,220	Greene ...	1,890	5,220
Conway	2,178	5,000	Hempstead ..	4,046	10,220
Craighead ...	199	5,220	Hot Springs ...	1,439	....
Crawford	6,868	10,440	Independence	4,718	5,000

TABLE VII.

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF ARKANSAS.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob Loss.	Actual Loss.
Izard	131	....	Scott	322	....
Jackson ...	9,044	19,440	Sebastian	7,581	15,220
Jefferson .	25,782	42,050	Sevier ..	104	....
Johnson	1,556	1,000	Sharpe	142	....
Lafayette ...	1,148	....	St. Francis.	2,677	10,220
Lawrence	599	....	Union ...	9,463	....
Little River ...	1,484	10,000	Washington	1,071	....
Madison	103	....	White	3,322	5,220
Marion	65	....	Woodruff ...	9,075	8,000
Mississippi .	2,849	....	Yell	1,361	6,000
Monroe ...	3,041	5,424	Unknown	15,615	4,000
Montgomery	19	....	Additional	9,909	6,000
Ouachita	8,744	15,660	Total	295,413	508,119
Perry	....	....	Ratio	100	: 172
Phillips .	42,049	98,335			
Pike	570	3,000			
Poinsett ...	149	....	Alluvial .	98,449	221,995
Polk	7	....	Ratio	100	: 226
Pope	482	1,000	Middle ...	125,202	196,084
Prairie ...	3,829	7,220	Ratio	100	: 157
Pulaski ...	71,442	110,120	Upland	46,238	80,040
Randolph	2,724	5,000	Ratio	100	: 173
Saline	248	...			

STATE OF FLORIDA.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob Loss.	Actual Loss.
Alachua .	6,419	42,500	Orange.	350	....
Baker .	404	....	Polk .	12	....
Bradford .	282	....	Putnam .	3,385	1,000
Clay .	566	5,000	Santa Rosa .	4,455	....
Columbia .	86	3,000	St. Johns .	2,527	....
Dade .	369	....	Sumpter .	62	....
Duval.	31,126	66,111	Suwannee .	1,201	....
Escambia .	23,796	29,000	Volusia .	17	1,000
Franklin .	7,689	7,000	Wakulla .	57	....
Gadsden .	5,465	15,000	Walton .	164	....
Hamilton .	753	....	Unknown	380	11,000
Hernando .	380	....	Additional	18,781	35,706
Hillsborough .	564	....	Total	181,635	303,852
Jackson ...	5,960	25,000	Ratio	100	: 167
Jefferson .	9,911	10,000			
Leon (Tallahassee).	23,461	33,435			
Levy .	90	....	Alluvial .	133,347	224,596
Madison ...	22,798	7,550	Ratio	100	: 169
Marion .	1,942	....	Middle ...	28,758	32,550
Monroe(KeyWest).	4,971	2,000	Ratio	100	: 113
Nassau .	3,212	9,550			

TABLE VII.   171

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF GEORGIA.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Appling ...	$263	....	Jackson	1,058	....
Baker ...	1,028	....	Jasper	916	....
Baldwin	9,221	....	Jefferson ...	9,169	....
Bartow	3,524	14,500	Johnson ...	4,477	11,250
Berrien ...	99	....	Jones	404	....
Bibb	63,130	78,380	Laurens ...	945	....
Brooks ...	2,003	....	Lee ...	4,811	10,220
Bryan ...	52	....	Liberty ...	1,045	....
Bullock ...	95	....	Lincoln	2,185	....
Burke ...	5,033	7,000	Lowndes ...	5,637	2,500
Butts	13	....	Lumpkin	297	....
Calhoun ...	99	....	Macon ...	4,294	5,220
Camden .	1,876	2,500	Marion ..	2,005	10,220
Campbell	2,913	....	McIntosh ...	429	....
Carroll	1,174	....	Merriweather	343	....
Case	285	....	Miller ...	180	....
Catoosa	47	....	Mitchel ...	1,718	....
Charlton .	241	5,000	Monroe	7,202	5,220
Chatham ...	200,436	259,895	Montgomery ...	544	....
Chattahoochee ..	185	....	Morgan	7,512	10,440
Chattooga	496	....	Murray	808	....
Cherokee	231	....	Muscogee ..	47,445	59,597
Clarke	26,408	15,220	Newton	3,407	....
Clay ...	1,449	....	Oglethorpe	4,318	....
Clinch ...	279	....	Pierce ...	883	7,500
Cobb	17,259	10,000	Pike	1,757	5,000
Coffee ...	73	....	Polk	492	6,000
Columbia	7,171	2,000	Pulaski ...	7,502	11,440
Coweta	9,870	10,440	Putnam	9,462	....
Crawford	142	...	Quitman ...	633	....
Dade	269	....	Randolph ...	6,901	....
Decatur ...	4,064	17,220	Richmond ...	107,140	83,160
De Kalb	1,868	....	Schley ..	959	....
Dooly ...	492	....	Scriven ...	483	....
Dougherty ...	16,371	28,308	Spalding	16,084	....
Early ...	3,137	....	Stewart ..	4,885	....
Effingham ...	427	....	Sumpter ...	20,040	21,240
Elbert	1,305	....	Talbot ..	5,004	5,000
Floyd	13,686	....	Tatnall ...	475	....
Forsyth	703	....	Taylor ..	1,815	....
Fulton	101,439	59,000	Telfair ...	1,273	....
Glynn ...	3,361	5,000	Terrell ...	10,814	5,000
Gordon	664	....	Thomas ...	10,459	5,330
Greene	1,963	3,000	Troup	9,145	5,220
Gwinnett	198	....	Twiggs ...	2,882	10,000
Hall	98	....	Union	76	....
Hancock	4,262	13,000	Upson ..	578	....
Harris ..	558	....	Walker	82	....
Hart	18	....	Walton	3,753	....
Heard	793	....	Ware . .	707	....
Henry	15	....	Warren	3,506	....
Houston ...	12,837	17,940	Washington ...	3,451	15,000
Irwin ...	424	....	Wayne. ...	347	....

TABLE VII.

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF GEORGIA.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Webster ...	$394	....	Alluvial .	2,117	7,500
White	760	....	Ratio	100	: 354
Whitfield	5,686	10,440	Middle ...	524,221	603,540
Wilcox ...	83	1,000	Ratio	100	: 115
Wilkes	7,320	10,000	Upland	355,738	257,860
Wilkinson ...	983	....	Ratio	100	: 72
Worth ...	66	....			
Unknown	6,691	8,500			
Additional	61,886	38,636			
Total	950,653	911,536			
Ratio	100	: 96			

STATE OF LOUISIANA.

Parishes.	Prob. Loss.	Actual Loss.	Parishes.	Prob. Loss.	Actual Loss.
Ascension .	$937	....	Plaquemines .	2,577	7,000
Assumption .	2,088	....	Point Coupée .	19,361	27,380
Avoyelles .	19,799	20,880	Rapides .	9,458	7,000
Bienville ...	2,968	5,220	Richland .	2,320	5,220
Bossier .	4,734	5,220	St. Charles .	472	....
Caddo .	50,677	134,090	St. Helena ...	2,070	....
Calcasieu .	505	....	St. James .	1,040	10,000
Caldwell .	1,297	3,000	St. Landry .	10,677	10,440
Carroll .	12,683	15,440	St. Martin .	13,457	5,220
Catahoula ...	3,347	10,220	St. Mary .	6,668	11,440
Claiborne ...	5,832	....	St. Tammany .	502	....
Concordia .	4,094	....	Tangipahoa .	848	1,000
De Soto ...	4,138	15,220	Tensas .	14,095	20,880
E. Baton Rouge .	14,447	18,440	Terrebonne .	3,703	30,000
E. Feliciana .	21,616	61,100	Union ...	2,413	....
Franklin .	4,861	14,220	Vermilion .	468	5,220
Grant .	2,747	....	Washington ...	2,631	....
Iberia .	1,091	...	W. Baton Rouge .	3,181	10,220
Iberville .	5,275	15,660	W. Feliciana .	10,751	32,440
Jackson ...	487	....	Winn ...	15	....
Jefferson .	16,427	11,300	Unknown	20,208	23,000
Lafayette .	6,290	....	Additional	67,231	153,000
Lafourche .	7,505	26,262	Total	1,363,520	2,400,915
Livingston .	583	....	Ratio	100	: 176
Madison .	3,618	20,220			
Morehouse .	8,024	8,350	Alluvial .	1,252,180	2,194,255
Natchitoches .	4,096	10,000	Ratio	100	: 175
Orleans .	949,144	1,593,793	Middle ...	23,901	30,660
Ouachita .	10,064	52,820	Ratio	100	: 128

TABLE VII. 173

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF MISSISSIPPI.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Adams .	33,747	43,220	Montgomery ...	49	5,220
Alcorn ..	3,239	....	Neshoba ..	105	....
Amite ...	21,673	5,000	Newton ..	910	....
Attala ...	1,546	10,000	Noxubee ..	23,170	15,255
Bolivar .	16,677	93,520	Oktibbeha ..	12,837	5,179
Calhoun ...	1,933	....	Panola .	17,765	26,100
Carroll ...	14,214	15,440	Perry ...	99	5,220
Chickasaw ..	5,995	10,440	Pike ...	10,667	51,440
Choctaw ...	5,584	12,720	Pontotoc ..	2,006	....
Claiborne .	7,535	5,000	Prentiss ..	29	....
Clark ...	12,427	17,220	Rankin ...	3,947	11,500
Coahoma .	12,571	27,440	Scott ...	942	....
Copiah ...	18,284	19,930	Simpson ...	132	....
Covington ...	....	2,500	Smith ...	2,075	....
De Soto .	22,695	43,760	Sunflower .	3,488	10,220
Franklin ...	3,183	....	Tallahatchie	13,442	10,440
Grenada ...	22,809	39,540	Tippah ..	2,151	....
Hancock .	794	3,000	Tishemingo ..	1,927	....
Harrison .	5,734	12,440	Tunica .	7,191	10,220
Hinds ...	41,040	90,660	Union ..	1,141	5,220
Holmes ...	8,614	23,440	Warren(Vicksb'g).	95,136	151,200
Issaquena .	5,243	5,000	Washington .	19,770	51,760
Itawamba ..	1,438	....	Wayne ...	194	....
Jackson .	4,850	....	Wilkinson .	8,559	20,000
Jasper ...	2,305	....	Winston ..	2,545	2,000
Jefferson .	9,951	30,660	Yalabusha ...	22,858	26,100
Kemper ..	3,034	7,000	Yazoo .	29,381	18,720
Lafayette ...	14,357	15,660	Unknown	21,650	51,000
Lauderdale ..	12,515	18,000	Additional	42,622	104,368
Lawrence ...	6,739	10,000	Total	795,476	1,308,632
Leake ...	877	....	Ratio	100	: 164
Lee ..	3,151	5,000			
Lincoln ...	6,564	5,220	Alluvial .	301,087	552,260
Lowndes ...	50,669	82,670	Ratio	100	: 184
Madison ...	25,873	41,220	Middle ...	416,626	585,344
Marion ...	....	....	Ratio	100	: 140
Marshall ...	34,520	16,550	Upland	13,491	15,660
Monroe ..	6,308	15,220	Ratio	100	: 116

STATE OF NORTH CAROLINA.

Counties	Prob. Loss	Actual Loss	Counties	Prob. Loss	Actual Loss
Alamance	4,556	5,000	Camden .	878	....
Alexander	8	...	Carteret .	7,652	18,500
Anson	5,714	1,000	Caswell	1,488	15,000
Beaufort .	7,920	2,000	Catawba	1,841	...
Bertie .	15,815	24,000	Chatham	6,455	8,000
Bladen ...	10,342	12,000	Cherokee	57	...
Brunswick .	66	....	Chowan .	4,866	16,000
Buncombe	653	....	Cleaveland	3,450	7,500
Burke	458	7,000	Columbus ...	2,068	2,000
Cabarrus	3,494	2,000	Craven .	41,103	82,620
Caldwell	2,299	1,000	Cumberland ...	23,112	17,000

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF NORTH CAROLINA.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Currituck .	$286	....	Pasquotank .	8,794	15,000
Davidson	3,280	....	Perquimans .	4,307	4,000
Davie	1,215	....	Person	110	....
Duplin ...	6,115	....	Pitt ...	13,556	22,000
Edgecombe ...	48,389	11,000	Polk	123	....
Forsyth	1,508	2,000	Randolph	1,653	....
Franklin ...	8,369	6,000	Richmond ...	4,481	...
Gaston	3,246	20,000	Robeson ...	6,924	6,500
Gates .	4,909	16,500	Rockingham	2,100	....
Granville	14,830	...	Rowan	18,079	15,000
Greene ...	13,266	13,000	Rutherford	1,719	....
Guilford	7,260	7,000	Sampson ...	7,421	2,000
Halifax ...	28,183	55,000	Stanley	123	....
Harnett ...	3,368	....	Stokes	180	....
Haywood	114	....	Surry	285	....
Henderson	178	....	Tyrrell .	1,526	2,000
Hertford ...	3,576	5,000	Union	761	....
Hyde .	726	....	Wake ...	128,886	131,633
Iredell	5,252	5,000	Warren	11,350	13,000
Jackson	1,045	....	Washington .	5,868	1,085
Johnston ...	12,848	20,000	Watanga	38	....
Jones .	1,593	7,000	Wayne ...	22,752	33,000
Lenoir ...	22,149	62,000	Wilkes	354	....
Lincoln	4,430	....	Wilson ...	21,075	36,500
Macon	285	....	Yadkin	855	5,000
Madison	237	....	Unknown	16,053	33,500
Martin .	13,783	20,000	Additional	32,981	38,000
McDowell	3,872	2,000	Total	843,815	1,069,409
Mecklenburg	47,667	66,720	Ratio	100	:127
Mitchell	45	....			
Montgomery	101	....			
More	2,104	....	Alluvial .	225,053	353,555
Nash ...	2,740	5,000	Ratio	100	:157
New Hanover .	103,265	144,850	Middle ...	390,924	442,633
Northampton ...	1,304	3,000	Ratio	100	:113
Onslow .	1,696	....	Upland	178,804	201,721
Orange	13,932	19,501	Ratio	100	:113

STATE OF SOUTH CAROLINA.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Abbeville	26,231	23,940	Edgefield	7,285	....
Anderson	14,784	33,820	Fairfield	13,682	28,390
Barnwell ...	9,449	2,000	Georgetown .	7,177	....
Beaufort .	8,462	15,000	Greenville	15,789	17,914
Charleston .	347,589	417,440	Horry .	5,360	10,340
Chester	21,728	31,000	Kershaw ...	9,373	....
Chesterfield ...	4,883	5,000	Lancaster	4,257	2,500
Clarendon ...	4,263	1,500	Laurens	17,988	38,720
Colleton .	5,899	3,658	Lexington ...	1,190	...
Darlington ...	5,804	7,000	Marion ..	16,865	10,000

TABLE VII.   175

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF SOUTH CAROLINA.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Marlborough ...	$5,412	....	Unknown	5,542	9,000
Newberry	26,516	10,720	Additional	1,715	....
Oconee	7	....	.Total	753,060	864,635
Orangeburgh ...	20,718	16,253	Ratio	100	:115
Pickens	628	....			
Richland (Colum-bia) ...	90,086	120,440	Alluvial .	374,487	446,438
Spartanburg	7,446	15,000	Ratio	100	:119
Sumter ...	16,034	15,000	Middle ...	192,307	182,193
Union	6,707	15,000	Ratio	100	:95
Williamsburg ...	8,230	5,000	Upland	179,009	227,004
York	15,961	10,000	Ratio	100	:127

STATE OF TENNESSEE.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Anderson	1,365	....	Henderson ..	1,683	....
Bedford	16,423	31,660	Henry ...	4,250	10,220
Benton ..	614	....	Hickman	2,329	....
Bledsoe	545	....	Humphreys	710	5,000
Blount	1,263	....	Jefferson	1,337	....
Bradley	8,422	2,000	Johnson	99	....
Campbell	1,585	....	Knox	27,321	28,440
Cannon	99	....	Lake .	616	....
Carroll	2,692	....	Lauderdale .	16,212	15,660
Carter	1,022	....	Lawrence	314	....
Cheatham	130	....	Lincoln	18	....
Claiborne	397	....	Macon	160	....
Cocke	149	5,000	Madison ...	44,568	38,320
Coffee	552	2,000	Marion	2,555	2,000
Crocket	99	....	Marshall	4,325	....
Cumberland	802	....	Maury	59,708	68,441
Davidson (Nash-ville)	147,911	208,386	McMinn	3,602	1,000
			McNairy	1,632	....
Decatur ..	560	....	Meigs	992	....
De Kalb	397	2,000	Monroe	4,599	3,068
Dickson	665	....	Montgomery	54,768	48,640
Dyer .	9,871	10,440	Obion ...	9,517	20,880
Fayette ...	40,039	60,600	Perry	1,041	....
Franklin	7,482	2,500	Polk	3,238	....
Gibson ...	12,263	20,880	Rhea	518	....
Giles	22,868	15,660	Roane	1,953	....
Grainger	2,629	....	Robertson	3,454	10,440
Greene	2,675	2,000	Rutherford	26,064	73,880
Grundy	294	....	Scott	4,215	....
Hamilton	13,934	5,000	Sequatchie	49	....
Hancock	496	....	Sevier	397	....
Hardeman ...	8,174	5,220	Shelby(Memphis .	652,127	1,439,536
Hardin ..	3,369	....	Smith	1,187	....
Hawkins	496	....	Stewart	2,534	....
Haywood ...	49,859	47,040	Sullivan	1,381	....

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF TENNESSEE.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Sumner	$5,652	11,220	Additional	14,405	5,000
Tipton .	29 610	23,000	Total	1,383,648	2,262,121
Union	1,190	··	Ratio	100	:163
Warren	146	....			
Washington	458	....			
Wayne	843	5,220	Alluvial .	708,436	1,488,636
Weakley ...	6,564	6,220	Ratio	100	:210
White	99	....	Middle ...	181,460	209,380
Williamson	3,683	5,000	Ratio	100	:115
Wilson	9,317	5,550	Upland	467,280	544,055
Unknown	12,067	15,000	Ratio	100	:116

STATE OF TEXAS.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Anderson	3,419	2,500	Freestone	5,956	20,880
Angelina ...	642	....	Frio ...	846	....
Atascosa ...	1,522	....	Galveston .	158,697	389,487
Austin ...	11,964	20,880	Gillespie	595	....
Bastrop ...	3,163	....	Goliad ...	3,523	....
Bee ...	351	....	Gonzales ...	12,321	20,677
Bell	1,720	10,000	Grayson	9,657	22,440
Bexar	35,418	32,220	Grimes ...	10,750	5,220
Blanco	528	....	Gaudalupe ...	5,869	5,220
Bosque ...	2,625	....	Hardeman	95	....
Bowie	5,458	10,440	Hardin .	290	5,000
Brazoria .	14,540	41,220	Harris ...	69,767	177,280
Brazos ...	24,633	25,660	Harrison ...	17,623	26,100
Burleson ...	2,321	10,000	Hays	2,712	....
Burnet	2,412	....	Henderson	347	....
Caldwell ..	4,412	10,000	Hill ...	2,650	....
Calhoun .	8,331	15,000	Hood	5	....
Cameron .	2,210	5,000	Hopkins	644	....
Chambers .	458	....	Houston ...	4,699	8,000
Cherokee ...	690	....	Jack	563	....
Coleman	76	....	Jackson .	49	....
Collin ...	1,864	....	Jasper .	1,552	2,000
Colorado ...	8,446	13,720	Jefferson .	3,331	16,660
Comal	3,514	1,000	Johnson	1,700	....
Comanche	480	....	Karnes ...	4,726	....
Cook	758	....	Kaufman	1,227	5,000
Coryell	899	...	Kendall	517	....
Dallas ...	5,105	10,220	Kerr	47	....
Davis	1,007	5,000	Kinney	960	....
Denton	1,719	....	Lamar	4,201	10,440
De Witt ...	4,042	10,000	Lampasas	248	....
Ellis ...	6,164	5,220	Lavacca ...	14,609	5,220
El Paso	190	....	Leon ...	1,991	....
Falls	3,912	20,440	Liberty .	2,987	6,220
Fannin ...	5,821	10,440	Limestone	13,644	10,220
Fayette ...	10,816	21,390	Live Oak ..	972	5,220
Fort Bend .	3,696	20,660	Llano	1,266	....

TABLE VII.

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PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF TEXAS.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Madison ...	$296	....	Titus	2,789	....
Marion	28,156	85,498	Travis	13,656	7,500
Matagorda .	6,716	5,000	Trinity ...	297	....
McLennan ...	24,387	46,880	Tyler ...	47	....
Medina	532	2,000	Upshur	1,898	....
Milam ...	4,625	6,220	Uvalde	1,759	...
Montgomery ...	3,417	5,000	Van Zandt	190	....
Nacogdoches ...	902	....	Victoria .	5,609	5,220
Navarro	14,073	5,220	Walker ...	2,202	7,500
Newton .	7	....	Washington ...	20,767	47,100
Nueces .	1,986	....	Wharton .	144	....
Orange .	1,661	....	Williamson	1,113	2,000
Palo Pinto	787	....	Wilson ...	920	....
Panola ...	1,632	....	Wise	8	1,000
Parker	2,216	5,220	Wood	418	....
Polk ...	168	....	Unknown	26,794	5,000
Red River	5,887	....	Additional	21,065	6,000
Refugio .	1,779	....	Total	778,713	1,358,972
Robertson ...	22,096	66,100	Ratio	100	: 175
Rusk ...	3,239	3,000			
Sabine ...	967	....	Alluvial .	214,043	511,467
San Saba	276	....	Ratio	100	: 239
Shelby ..	2,012	....	Middle ...	332,901	572,267
Smith	1,301	....	Ratio	100	: 172
Starr	296	....	Upland	184,655	264,238
Tarrant	2,661	5,220	Ratio	100	: 143

STATE OF VIRGINIA.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Accomack .	3,163	12,000	Elizabeth City	3,087	....
Albemarle	8,819	15,000	Essex ...	2,288	10,000
Alexandria	37,319	35,500	Fairfax	7,147	9,000
Amelia ...	100	5,000	Fauquier	2,647	....
Amherst	1,350	....	Fluvanna	123	5,000
Appomattox	47	....	Franklin	411	. ...
Augusta	10,080	18,500	Frederick	897	15,750
Bedford	541	....	Giles	228	....
Botetourt	285	....	Gloucester ...	2,356	2,500
Brunswick ...	1,297	13,000	Goochland ...	139	....
Buckingham	449	....	Greenville ...	1,426	....
Campbell	28,090	10,000	Halifax	1,181	....
Caroline ...	1,276	....	Hanover ...	2,342	....
Charles City ...	884	....	Henrico ...	149,712	127,500
Charlotte	3,117	21,500	Henry	7	....
Chesterfield ...	8,259	12,500	Highland	48	....
Clark	1,036	....	Isle of Wight ...	260	....
Craig	6	....	James City ...	617	....
Culpepper	2,026	10,000	King and Queen...	48	....
Cumberland	115	....	King George ...	665	....
Dinwiddie ...	124,042	84,500	King William ...	847	....

TABLE VII.

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF VIRGINIA.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Lancaster ...	$279	2,000	Roanoke	3,972	5,000
Lee	11	....	Rockbridge	1,662	5,000
Loudon	12,312	30,000	Rockingham	636	....
Louisa	48	....	Shenandoah	271	....
Lunenburg ...	230	....	Smyth	815	1,000
Madison	584	....	Southampton ...	1,285	....
Matthews ...	595	....	Spottsylvania ...	25,838	18,100
Mecklenburg ...	1,171	2,000	Stafford	693	...
Middlesex ...	1,075	....	Surry ...	33	....
Montgomery	503	....	Sussex ...	798	5,000
Nansemond...	2,932	....	Warren	261	5,000
Nelson	296	....	Warwick ...	30	....
New Kent ...	749	2,000	Washington	1,347	9,000
Norfolk ...	42,309	59,000	Westmoreland ...	551	....
Northampton .	38	....	Wythe	363	....
Northumberland...	813	....	York ...	1,950	1,000
Nottoway ...	47	....	Unknown	11,378	27,000
Orange	1,359	....	Additional	104,312	81,500
Page	190	....	Total	646,188	673,350
Pittsylvania	5,075	3,000	Ratio	100	: 104
Powhatan ...	19	....			
Prince Edward	564	....	Alluvial .	3,567	13,000
Prince George ...	922	5,000	Ratio	100	: 364
Princess Anne	1,095	2,500	Middle ...	385,727	349,100
Prince William .	366	1,000	Ratio	100	: 90
Rappahannock	91	2,000	Upland	141,204	202,750
Richmond ...	7,543	....	Ratio	100	: 144

STATE OF INDIANA.

Counties	Prob. Loss.	Actual Loss.	Counties	Prob. Loss.	Actual Loss.
Adams	$2,636	2,500	Floyd	68,366	60,713
Allen	83,143	84,500	Fountain	6,716	7,000
Bartholomew	24,058	29,500	Franklin	4,579	7,000
Benton	293	....	Fulton	5,691	8,100
Blackford	310	750	Gibson	17,638	21,000
Boone	9,993	14,500	Grant	6,392	3,000
Brown	1,078	5,000	Green	3,805	2,000
Carroll	9,535	9,000	Hamilton	17,261	21,249
Cass	21,080	20,000	Hancock	8,126	2,500
Clarke	35,387	40,000	Harrison	3,741	....
Clay	12,967	9,000	Hendricks	14,113	11,000
Clinton	1,217	....	Henry	13,671	19,390
Crawford	6,709	16,900	Howard	5,267	5,000
Daviess	11,227	16,000	Huntington	10,303	6,343
Dearborn	35,840	24,500	Jackson	14,297	13,000
Decatur	18,782	14,000	Jasper	679	....
DeKalb	6,249	2,000	Jay	668	....
Delaware	21,134	45,220	Jefferson	69,401	68,000
Du Bois	3,402	11,000	Jennings	2,003	....
Elkhart	8,649	1,100	Johnson	21,018	7,300
Fayette	17,726	4,200	Knox	7,807	3,000

TABLE VII. 179

PROBABLE LOSS AND ACTUAL LOSS BY COUNTIES IN TWELVE STATES.

STATE OF INDIANA.—Continued.

Counties.	Prob. Loss.	Actual Loss.	Counties.	Prob. Loss.	Actual Loss.
Kosciusko	$10,464	4,500	Scott	124	1,000
La Grange	1,879	4,000	Shelby	20,163	37,000
Lake	1,392	. . . .	Spencer	31,383	43,894
La Porte	54,045	45,700	Starke	360	. . . .
Lawrence	7,266	348	Steuben	1,757	. . . .
Madison	48,863	65,088	St. Joseph	50,975	60,350
Marion	220,246	214,050	Sullivan	5,157	4,000
Marshall	15,564	18,200	Switzerland	10,845	9,200
Martin	425	2,000	Tippecanoe	40,246	42,080
Miami	16,601	10,500	Tipton	6,181	2,800
Monroe	10,969	4,000	Union	2,481	. . . .
Montgomery	20,974	26,100	Vanderburgh	54,739	75,642
Morgan	14,592	8,500	Vermillion	2,107	. . . .
Newton	2,064	. . . .	Vigo	57,339	72,500
Noble	6,564	5,000	Wabash	18,655	12,325
Ohio	1,662	. . . .	Warren	2,758	2,000
Orange	7,355	4,165	Warrick	8,856	1,000
Owen	5,134	2,000	Washington	5,378	9,500
Parke	5,799	12,400	Wayne	69,563	56,500
Perry	7,791	5,500	Wells	1,632	. . . .
Pike	302	. . . .	White	745	. . . .
Porter	27,004	21,800	Whitley	1,888	5,000
Posey	33,638	50,100	Unknown	7,077	8,900
Pulaski	27	. . . .	Additional	836,541	975,321
Putnam	49,785	34,100	Total	2,465,769	2,590,728
Randolph	15,568	13,900	Ratio	100	: 105
Ripley	957	2,000			
Rush	8,932	2,500			

TABLE VIII.

THIRTY OFFICES' EXPERIENCE. COMMUTATION TABLE FOR THE SPECIAL CLIMATIC
RATIOS 1.405 AND 1.805.

4 PER CENT.

AGE.	1.405 D_x.	1.805 D_x.	.400 Diff.	1.405 N_x.	1.805 N_x.	.400 Diff.	1.405 π_x.	1.805 π_x.	.400 Diff.	AGE.
10	64,393	61,391	3,002	1,232,048	1,089,675	142,373	13.803	17.878	4.075	10
11	61,221	58,089	3,132	1,167,655	1,028,284	139,371	13.969	18.030	4.061	11
12	58,204	54,963	3,241	1,106,434	970,195	136,239	14.143	18.190	4.047	12
13	55,334	52,005	3,329	1,048,231	915,231	133,000	14.327	18.360	4.033	13
14	52,605	49,205	3,400	992,897	863,226	129,671	14.520	18.539	4.019	14
15	50,009	46,554	3,455	940,291	814,022	126,269	14.723	18.728	4.005	15
16	47,540	44,045	3,495	890,282	767,468	122,814	14.937	18.928	3.991	16
17	45,192	41,670	3,522	842,742	723,423	119,319	15.164	19.139	3.975	17
18	42,959	39,422	3,537	797,550	681,753	115,797	15.402	19.362	3.960	18
19	40,834	37,294	3,540	754,591	642,332	112,259	15.652	19.598	3.946	19
20	38,813	35,279	3,534	713,757	605,038	108,719	15.917	19.847	3.930	20
21	36,891	33,372	3,519	674,944	569,759	105,185	16.196	20.111	3.915	21
22	35,061	31,566	3,495	638,054	536,387	101,667	16.489	20.389	3.900	22
23	33,322	29,857	3,465	602,992	504,820	98,172	16.799	20.683	3.884	23
24	31,666	28,239	3,427	569,670	474,963	94,707	17.126	20.993	3.867	24
25	30,092	26,707	3,385	538,004	446,724	91,280	17.470	21.322	3.852	25
26	28,593	25,256	3,337	507,912	420,018	87,894	17.834	21.669	3.835	26
27	27,167	23,882	3,285	479,319	394,762	84,557	18.217	22.036	3.819	27
28	25,810	22,581	3,229	452,152	370,880	81,272	18.622	22.425	3.803	28
29	24,519	21,350	3,169	426,342	348,298	78,044	19.049	22.835	3.786	29
30	23,290	20,183	3,107	401,822	326,949	74,873	19.500	23.269	3.769	30
31	22,120	19,078	3,042	378,532	306,766	71,766	19.976	23.729	3.753	31
32	21,007	18,031	2,976	356,412	287,688	68,724	20.479	24.215	3.736	32
33	19,947	17,040	2,907	335,405	269,657	65,748	21.010	24.730	3.720	33
34	18,938	16,101	2,837	315,458	252,617	62,841	21.571	25.274	3.703	34
35	17,977	15,211	2,766	296,520	236,516	60,004	22.164	25.851	3.687	35
36	17,062	14,368	2,694	278,543	221,305	57,238	22.791	26.461	3.670	36
37	16,190	13,569	2,621	261,482	206,937	54,545	23.454	27.108	3.654	37
38	15,359	12,812	2,547	245,292	193,369	51,923	24.155	27.793	3.638	38
39	14,568	12,094	2,474	229,933	180,557	49,376	24.898	28.519	3.621	39
40	13,815	11,413	2,402	215,364	168,463	46,901	25.683	29.288	3.605	40
41	13,096	10,768	2,328	201,550	157,050	44,500	26.514	30.104	3.590	41
42	12,411	10,156	2,255	188,454	146,282	42,172	27.396	30.969	3.573	42
43	11,758	9,576.1	2,182	176,043	136,125	39,918	28.328	31.886	3.558	43
44	11,135	9,025.7	2,109	164,285	126,549	37,736	29.317	32.860	3.543	44
45	10,541	8,503.4	2,038	153,150	117,523	35,627	30.366	33.893	3.527	45
46	9,974.0	8,007.7	1,966.2	142,609	109,020	33,589	31.478	34.991	3.513	46
47	9,432.9	7,537.3	1,895.6	132,635	101,012	31,623	32.658	36.156	3.498	47
48	8,916.3	7,090.6	1,825.7	123,202	93,474.9	29,727	33.910	37.394	3.484	48
49	8,423.0	6,666.4	1,756.6	114,286	86,384.3	27,902	35.240	38.710	3.470	49
50	7,951.9	6,263.5	1,688.4	105.863	79,717.9	26,145	36.653	40.109	3.456	50
51	7,501.6	5,880.7	1,620.9	97.910.9	73,454.4	24,457	38.154	41.597	3.443	51
52	7,071.2	5,516.9	1,554.3	90,409.3	67,573.8	22,836	39.751	43.181	3.430	52
53	6,659.7	5,171.1	1,488.6	83,338.1	62,056.7	21,281	41.450	44.867	3.417	53
54	6,266.1	4,842.3	1,423.8	76,678.5	56,885.8	19,793	43.258	46.663	3.405	54
	D, 4½ p.c.	D, 5 p.c.		N, 4½ p.c.	N, 5 p. c.			Insurance 1000		

TABLE VIII.

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THIRTY OFFICES' EXPERIENCE. COMMUTATION TABLE FOR THE SPECIAL CLIMATIC RATIOS 1.405 AND 1.805.

4 PER CENT.

AGE.	1.405 D_x.	1.805 D_x.	.400 Diff.	1.405 N_x.	1.805 N_x.	.400 Diff.	1.405 π_x.	1.805 π_{x^*}.	.400 Diff.	AGE.
55	5,889.8	4,529.8	1,360.0	70,412.4	52,043.4	18,369.0	45.184	48.577	3.393	55
56	5,529.4	4,232.4	1,297.0	64,522.7	47,513.7	17,009.0	47.235	50.616	3.381	56
57	5,184.5	3,949.6	1,234.9	58,993.3	43,281.3	15,712.0	49.422	52.791	3.369	57
58	4,854.3	3,680.4	1,173.9	53,808.8	39,331.7	14,477.1	51.752	55.111	3.359	58
59	4,538.1	3,424.3	1,113.8	48,954.5	35,651.4	13,303.1	54.239	57.588	3.349	59
60	4,235.4	3,180.7	1,054.7	44,416.4	32,227.1	12,189.3	56.896	60.233	3.337	60
61	3,945.5	2,948.8	996.7	40,181.0	29,046.4	11,134.6	59.732	63.060	3.328	61
62	3,667.9	2,728.3	939.6	36,235.5	26,097.6	10,137.9	62.763	66.081	3.318	62
63	3,402.2	2,518.6	883.6	32,567.6	23,369.3	9,198.3	66.004	69.313	3.309	63
64	3,147.9	2,319.3	828.6	29,165.4	20,850.1	8,315.3	69.472	72.770	3.298	64
65	2,904.7	2,129.9	774.8	26,017.5	18,531.4	7,486.1	73.182	76.472	3.290	65
66	2,672.2	1,950.1	722.1	23,112.8	16,401.5	6,711.3	77.154	80.434	3.280	66
67	2,450.3	1,779.6	670.7	20,440.6	14,451.5	5,989.1	81.411	84.682	3.271	67
68	2,238.6	1,618.1	620.5	17,990.3	12,671.9	5,318.4	85.971	89.232	3.261	68
69	2,037.1	1,465.5	571.6	15,751.7	11,053.8	4,697.9	90.866	94.116	3.250	69
70	1,845.6	1,321.4	524.2	13,714.6	9,588.3	4,126.3	96.111	99.351	3.240	70
71	1,664.1	1,185.8	478.3	11,869.0	8,266.9	3,602.1	101.74	104.97	3.23	71
72	1,492.5	1,058.4	434.1	10,204.9	7,081.1	3,123.8	107.79	111.00	3.21	72
73	1,330.8	939.23	391.6	8,712.4	6,022.8	2,689.6	114.28	117.49	3.21	73
74	1,179.0	828.18	350.8	7,381.7	5,083.5	2,298.2	121.26	124.45	3.19	74
75	1,037.2	725.09	312.1	6,202.62	4,255.34	1,947.3	128.76	131.93	3.17	75
76	905.40	629.93	275.5	5,165.42	3,530.25	1,635.2	136.82	139.97	3.15	76
77	783.67	542.64	241.0	4,260.02	2,900.32	1,359.7	145.50	148.63	3.13	77
78	671.93	463.05	208.9	3,476.35	2,357.68	1,118.7	154.82	157.94	3.12	78
79	570.22	391.09	179.2	2,804.41	1,894.63	909.8	164.87	167.96	3.09	79
80	478.45	326.59	151.9	2,234.19	1,503.54	730.65	175.69	178.75	3.06	80
81	396.47	269.33	127.1	1,755.74	1,176.95	578.79	187.35	190.38	3.03	81
82	324.06	219.10	105.0	1,359.27	907.62	451.65	199.95	202.94	2.99	82
83	260.89	175.55	85.34	1,035.21	688.52	346.69	213.55	216.51	2.96	83
84	206.60	138.36	68.24	774.32	512.97	261.35	228.36	231.26	2.90	84
85	160.63	107.06	53.57	567.713	374.607	193.11	244.48	247.33	2.85	85
86	122.41	81.199	41.21	407.081	267.547	139.53	262.25	265.03	2.78	86
87	91.272	60.254	31.02	284.668	186.348	98.320	282.16	284.88	2.72	87
88	66.390	43.619	22.77	193.395	126.094	67.301	304.82	307.46	2.64	88
89	47.042	30.760	16.28	127.006	82.475	44.531	331.93	334.50	2.57	89
90	31.844	20.723	11.12	79.9643	51.715	28.249	359.77	362.26	2.49	90
91	20.473	13.260	7.213	48.1201	30.992	17.128	387.00	389.39	2.39	91
92	12.567	8.1007	4.466	27.6470	17.732	9.9150	416.10	418.37	2.27	92
93	7.3390	4.7081	2.631	15.0799	9.6315	5.4484	448.21	450.36	2.15	93
94	4.0382	2.5783	1.460	7.7408	4.9234	2.8174	483.21	485.21	2.00	94
95	2.0773	1.3199	.7574	3.70262	2.3451	1.3575	522.56	524.38	1.82	95
96	.99391	.62854	.3654	1.62536	1.0252	.6002	573.04	574.65	1.61	96
97	.41960	.26409	.1555	.63145	.39664	.2348	626.04	627.37	1.33	97
98	.16062	.10061	.0600	.21185	.13255	.0793	719.70	720.58	0.88	98
99	.05123	.03194	.0193	.05123	.03194	.0193	961.54	961.54	0.00	99
	D,4½p.c.	D,5 p.c.		N, 4½ p.c.	N, 5 p. c.		Insurance 1000			

GENERAL TABLE OF DISEASES AND DEATHS IN TWENTY-SEVEN LIFE INSURANCE COMPANIES FROM THEIR ORGANIZATION TO THE YEAR 1874.

The columns headed (2), (5,) (20) record the Deaths in so many Companies.

DISEASES.	Number of Deaths.			Variability. M and F.			Per Cent. of Total.
	Males.	Females.	Total.	(2)	(5)	(20)	
All Causes.	35,442	2,182	37,624	12,845	12,456	12,323	100.00
SUMMARY.							
Zymotic Diseases	6,356	303	6,659	2,285	2,172	2,202	17.70
Constitutional Diseases	8,175	548	8,723	2,898	2,868	2,957	23.19
Nervous Diseases	5,106	193	5,299	1,977	1,715	1,607	14.08
Circulatory Diseases	1,986	106	2,092	785	668	639	5.56
Respiratory Diseases	4,771	291	5,062	1,682	1,641	1,739	13.45
Digestive Diseases	3,344	273	3,617	1,251	1,229	1,137	9.61
Miscellaneous Diseases	5,704	468	6,172	1,967	2,163	2,042	16.42
Zymotic Diseases.							
Typhoid Fever	2,147	107	2,254	744	775	735	5.99
Typhus Fever	159	11	170	82	48	40	.45
Cerebro-spinal Fever	23	1	24	23	1	0	.06
Yellow Fever	252	6	258	57	88	113	.69
Remittent Fever	412	25	437	156	122	159	1.16
Intermittent Fever	159	7	166	38	56	72	.44
Congestive Fever	213	13	226	94	66	66	.60
Typho-malarial Fever	46	4	50	17	21	12	.13
Fever	255	12	267	66	132	69	.71
Small Pox	298	7	305	74	101	130	.81
Measles	13	2	15	4	5	6	.04
Scarlet Fever	38	2	40	19	15	6	.11
Diphtheria and Malignant sore throat }	127	6	133	36	44	53	.35
Erysipelas	374	10	384	161	128	95	1.02
Pyæmia	70	4	74	21	27	26	.20
Carbuncle	62	1	63	28	16	19	.17
Influenza	12	2	14	4	7	3	.04
Dysentery	587	35	622	254	167	201	1.65
Diarrhœa	328	22	350	129	96	125	.93
Cholera	431	15	446	155	136	155	1.19
Cholera-morbus	195	8	203	63	79	61	.54
Goitre	4	0	4	2	2	0	01
Malignant pustule	11	0	11	2	4	5	.03
Glanders	1	0	1	1	0	0	.00
Purpura hæmorrhagica	21	0	21	3	5	13	.06
Alcoholism	117	1	118	50	31	37	.31
Other Zymotic Diseases	1	2	3	2	0	1	.00
Constitutional.							
Anæmia	59	12	71	20	33	18	.19
Cancer	621	44	665	241	216	208	1.77
Dropsy	622	56	678	205	237	236	1.80
Gout	23	0	23	13	4	6	.06
Rheumatism	169	11	180	52	75	53	.48
Gangrene	51	0	51	18	13	20	.14
Tubercular meningitis	10	1	11	3	3	5	.03
Lumbar abscess	11	0	11	6	3	2	.03

TABLE IX.

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GENERAL TABLE OF DISEASES AND DEATHS IN TWENTY-SEVEN LIFE INSURANCE
COMPANIES FROM THEIR ORGANIZATION TO THE YEAR 1874.

The columns headed (2), (5), (20) record the Deaths in so many Companies.

	DISEASES.	Number of Deaths.			Variability. M. and F.			Per Cent. of Total.
		Males.	Females.	Total.	(2)	(5)	(20)	
	All Causes.	35,442	2,182	37,624	12,845	12,456	12,323	100.00
Constitutional.	Scrofula	25	6	31	15	10	6	.08
	Tabes Mesenterica	88	5	93	31	36	26	.25
	Morbus Coxæ	12	0	12	5	3	4	.03
	Consumption	6,474	412	6,886	2,283	2,231	2,372	18.31
	Other Constitutional	10	1	11	6	4	1	.03
Nervous.	Apoplexy	1,705	61	1,766	653	599	514	4.70
	Congestion of brain	655	14	669	234	239	196	1.78
	Softening of brain	399	9	408	177	93	138	1.09
	Paralysis	841	32	873	360	250	263	2.32
	Disease of brain	721	37	758	239	251	268	2.02
	Convuls'ns and epilepsy	130	8	138	52	50	36	.37
	Insanity	140	6	146	63	41	42	.39
	Anxiety	2	0	2	2	0	0	.01
	Fright	1	0	1	1	0	0	.00
	Encephalitis	277	10	287	109	101	77	.76
	Cerebro-spinal sclerosis	1	0	1	1	0	0	.00
	Cerebral embolism	1	0	1	1	0	0	.00
	Anæmia of brain	8	0	8	4	2	2	.02
	Effusion on brain	48	3	51	10	23	18	.14
	Neuralgia	17	1	18	5	8	5	.05
	Progressive muscular atrophy	3	0	3	2	1	0	.01
	Tetanus	47	4	51	10	24	17	.14
	Inflam't'n of spinal cord	18	0	18	10	5	3	.05
	Disease of spinal cord	41	2	43	21	10	12	.11
	Congest'n of spinal cord	3	0	3	2	0	1	.01
	Other Nervous Diseases	48	6	54	21	18	15	.14
Circulatory.	Disease of heart	1,297	62	1,359	534	418	407	3.61
	Peri- and endo-carditis	104	9	113	29	38	46	.30
	Hypertrophy of heart	100	4	104	28	47	29	.28
	Valvular disease of heart	98	6	104	14	55	35	.28
	Fatty degen't'n of heart	42	3	45	21	15	9	.12
	Dropsy of heart	56	6	62	27	13	22	.16
	Rheumatism of heart	66	6	72	30	17	25	.19
	Atrophy of heart	4	0	4	4	0	0	.01
	Paralysis of heart	27	1	28	3	12	13	.07
	Abscess of heart	5	0	5	1	0	4	.01
	Angina pectoris	79	4	83	46	17	20	.22
	Aneurism of aorta	51	1	52	25	14	13	.14
	Rupture of aorta	16	1	17	6	7	4	.05
	Embolus of pulmonary artery	5	1	6	1	3	2	.02
	Phlebitis	18	0	18	4	9	5	.05
	Other Circulatory	18	2	20	12	3	5	.05

TABLE IX.

GENERAL TABLE OF DISEASES AND DEATHS.

	DISEASES.	Number of Deaths.			Variability. M. and F.			Per Cent. of Total.
		Males.	Females.	Total.	(2)	(5)	(20)	
	All Causes.	35,442	2,182	37,624	12,845	12,456	12,323	100.00
Respiratory.	Epistaxis	8	0	8	2	3	3	.02
	Disease of Larynx	112	3	115	30	44	41	.31
	Bronchitis	437	21	458	144	144	170	1.21
	Pleurisy	172	7	179	75	64	40	.48
	Congestion of Lungs	568	29	597	187	198	212	1.59
	Pneumonia	2,713	176	2,889	990	899	1,000	7.68
	Abscess of Lungs	78	6	84	25	36	23	.22
	Hemorrhage of Lungs	283	7	290	93	90	107	.77
	Disease of Lungs	264	31	295	92	111	92	.78
	Emphysema, Asthma	63	8	71	21	25	25	.19
	Pulmonary Apoplexy	34	1	35	10	16	9	.09
	Gangrene of Lungs	13	0	13	4	3	6	.03
	Œdema of Lungs	16	0	16	1	7	8	.04
	Other Respiratory	10	2	12	8	1	3	.03
Digestive.	Inflammat'n of Stomach	319	39	358	121	116	121	.95
	Ulceration of Stomach	75	6	81	34	29	18	.22
	Disease of Stomach	150	5	155	58	57	40	.41
	Hemorrhage of Stomach	57	1	58	18	20	20	.15
	Congestion of Stomach	23	2	25	7	9	9	.07
	Tumor of Stomach	4	0	4	3	1	0	.01
	Inflammation of Bowels	425	45	470	189	130	151	1.25
	Ulceration of Bowels	67	6	73	39	15	19	.19
	Hemorrhage of Bowels	84	2	86	33	24	29	.23
	Congestion of Bowels	22	5	27	8	14	5	.07
	Disease of Bowels	100	10	110	47	32	31	.29
	Obstruction of Bowels	36	1	37	9	12	16	.10
	Perforation of Bowels	6	1	7	3	2	2	.02
	Peritonitis	246	41	287	101	102	84	.76
	Gastro-enteritis	165	17	182	41	74	67	.48
	Disease of Stomach and Bowels	127	7	134	31	41	62	.36
	Hemorrhage	9	0	9	4	3	2	.02
	Strangulated Hernia	43	12	55	18	17	20	.15
	Colic, Tympanites and Constipation	69	3	72	22	28	22	.19
	Dyspepsia	43	3	46	13	24	9	.12
	Gangrene of Tongue	3	0	3	1	2	0	.01
	Stricture of Œsophagus	11	0	11	1	8	2	.03
	Fistula in Ano	12	0	12	3	5	4	.03
	Disease of Spleen	22	0	22	14	4	4	.06
	Leucocythæmia	7	1	8	3	0	5	.02
	Ascites	41	8	49	15	20	14	.13
	Abdominal Tumor	35	3	38	11	20	7	.10
	Undefined Diseases, Abdominal Organs	11	0	11	7	0	4	.03
	Jaundice	75	2	77	37	21	19	.20
	Inflammation of Liver	268	15	283	80	93	110	.75
	Cirrhosis of Liver	104	4	108	38	33	37	.29
	Abscess of Liver	79	7	86	28	32	26	.23

TABLE IX. 185

GENERAL TABLE OF DISEASES AND DEATHS.

DISEASES.	Number of Deaths.			Variability. M. and F.			Per Cent. of Total.
	Males.	Females.	Total.	(2)	(5)	(20)	
All Causes.	35,442	2,182	37,624	12,845	12,456	12,323	100.00
Digestive. Diseases of Liver	448	19	467	153	180	134	1.24
Congestion of Liver	63	3	66	29	22	15	.18
Hypertrophy of Liver	36	2	38	11	14	13	.10
Acute Yellow Atrophy of Liver	9	0	9	3	3	3	.02
Fatty Degeneration of Liver	15	1	16	4	6	6	.04
Biliary Calculus	15	0	15	6	6	3	.04
Obstruction of Hepatic Duct	4	0	4	1	..	3	.01
Rupture of Gall Bladder	2	0	2	1	1	..	.01
Other Digestive	14	2	16	6	9	1	.04
Miscellaneous. Bright's Disease	550	17	567	181	184	202	1.51
Inflammation of Kidneys	60	1	61	17	24	20	.16
Abscess of Kidneys	12	0	12	3	5	4	.03
Tumor of Kidney	1	0	1	1	..	..	..
Disease of Kidneys	255	9	264	116	81	67	.70
Diabetes	158	3	161	78	44	39	.43
Addison's Disease	12	0	12	3	5	4	.03
Inflammation of Bladder	74	2	76	24	16	36	.20
Disease of Bladder	54	1	55	24	16	15	.15
Hemorrhage of Bladder	5	0	5	1	2	2	.01
Rupture of Bladder	1	0	1	1	..	..	..
Urinary Calculi	20	1	21	4	11	6	.06
Gravel	13	0	13	8	0	5	.03
Disease of Prostate Gland	39	0	39	16	13	10	.10
Stricture of Urethra	5	0	5	4	1	..	.01
Gangrene of Scrotum	1	0	1	1	..	..	..
Other Urinary	66	5	71	16	25	30	.19
Childbirth and Puerperal Diseases	..	197	197	61	73	63	.52
Diseases of Breast and Uterus	..	110	110	29	53	28	.29
Debility, Exhaustion and Prostration	377	28	405	145	136	124	1.08
Abscess	117	5	122	43	38	41	.32
Hemorrhage	66	9	75	18	33	24	.20
Tumors	55	3	58	21	23	14	.15
Inflammation of Joints	15	0	15	8	2	5	.04
Old Age	87	12	99	63	18	18	.26
Accidents and Injuries	2,678	34	2,712	806	1,019	887	7.21
Suicides	475	7	482	150	180	152	1.28
Causes unknown or ill defined	508	24	532	125	161	246	1.42

TABLE X.

(A.) DISEASES AND DURATIONS OF POLICY AT DEATH OF 35,442 INSURED MALES.

	DISEASES.	Duration or Years of Insurance.							Total.
		0 — ½	½ — 1½	1½ — 2½	2½ — 4½	4½ — 9½	9½ — 19½	19½ — 29½	
	All Causes.	2,445	5,161	4,651	7,803	10,062	4,089	1,197	35,442
SUMMARY.	Zymotic Diseases	842	1,223	943	1,297	1,424	509	118	6,356
	Constitutional Diseases	226	978	1,124	2,091	2,635	937	182	8,175
	Nervous Diseases	297	620	591	1,078	1,525	745	247	5,107
	Circulatory Diseases	75	190	199	411	641	330	140	1,986
	Respiratory Diseases	312	761	626	1,031	1,322	553	165	4,770
	Digestive Diseases	216	493	461	717	949	402	105	3,344
	Miscellaneous Diseases	477	896	707	1,178	1,566	613	240	5,704
Zymotic.	Typhoid, Typhus Fever	316	473	357	468	492	160	40	2,306
	Malarial Fever	108	163	123	176	186	62	13	831
	Erysipelas	22	41	54	79	113	53	12	374
	Dysentery	92	105	75	124	124	52	15	587
	Diarrhœa	27	49	52	66	74	48	12	328
	Cholera	102	97	67	75	67	21	2	431
	Alcoholism	8	24	13	29	26	17	..	117
	Other Zymotic Diseases	167	271	202	280	342	96	24	1,382
Const'l.	Dropsy	25	74	66	147	180	96	23	611
	Cancer	15	55	51	155	216	95	44	632
	Consumption	155	790	947	1,691	2,113	689	89	6,474
	Other Constitutional	31	59	60	98	126	57	26	458
Nervous.	Apoplexy	115	210	208	357	468	250	96	1,705
	Congestion of Brain	64	102	85	147	179	63	15	655
	Paralysis, Softening etc., of Brain	101	253	234	452	724	357	112	2,236
	Epilepsy, Convulsions	4	15	19	35	37	17	3	130
	Other Nervous	13	40	45	87	117	58	21	381
Cir'y.	Diseases of Heart	66	173	189	386	597	313	131	1,855
	Other Circulatory	9	17	10	25	44	17	9	131
Respiratory.	Pneumonia	188	447	355	572	750	310	89	2,711
	Congestion of Lungs	44	92	81	107	149	70	25	568
	Bronchitis and Pleurisy	21	87	71	154	170	76	31	610
	Abscess, Hemorrhage etc., of Lungs	46	102	89	159	200	75	12	683
	Other Respiratory	13	33	30	39	53	22	8	198
Digestive.	Diseases of Stomach	36	84	91	139	160	95	23	628
	Diseases of Bowels	62	118	99	163	194	85	18	739
	Peritonitis	18	51	37	48	66	18	8	246
	Diseases of Liver	43	134	151	232	326	122	29	1,038
	Other Digestive	57	106	83	135	203	82	27	693
Miscellaneous.	Diabetes	4	17	11	33	60	19	14	158
	Diseases of Kidneys	31	85	100	178	302	140	50	886
	Other Urinary	8	24	26	55	85	56	28	282
	Childbirth and Puerperal Diseases	..	..	..	..	..	..	..	..
	Diseases of Breast and Uterus	..	..	..	..	..	..	..	..
	Abscess, Hemorrhage, Old Age	11	45	30	60	78	49	66	339
	Debility, Exhaustion, Prostration, etc.	8	40	35	75	120	61	38	378
	Accidents and Injuries	334	526	384	573	639	194	28	2,678
	Suicides	37	86	68	97	139	37	11	475
	Unknown Causes	44	73	53	107	143	57	5	508

NOTE. The Total, 35,442, includes 26 more unknown and 8 above 29½ Years.

TABLE X.   187

(B.) DISEASES AND DURATIONS OF POLICY AT DEATH OF 2,182 INSURED FEMALES.

	DISEASES.	Duration or Years of Insurance.							Total.
		0 — ½	½ — 1½	1½ — 2½	2½ — 4½	4½ — 9½	9½ 19½	19½ — 29½	
	All Causes.	197	403	341	467	513	190	70	2,182
SUMMARY.	Zymotic Diseases	48	62	48	61	57	23	4	303
	Constitutional Diseases	19	86	101	118	148	65	12	549
	Nervous Diseases	16	30	31	47	35	23	12	194
	Circulatory Diseases	9	11	12	24	32	9	9	106
	Respiratory Diseases	23	62	45	65	66	20	12	293
	Digestive Diseases	28	53	37	56	67	19	9	269
	Miscellaneous Diseases	54	99	67	96	108	31	12	468
Zymotic.	Typhoid, Typhus Fever	16	24	21	26	22	7	2	118
	Malarial Fever	8	12	11	7	6	5	..	49
	Erysipelas	..	1	1	3	4	1	..	10
	Dysentery	7	1	5	6	12	3	1	35
	Diarrhœa	4	7	3	4	3	1	..	22
	Cholera	4	2	3	4	2	..	..	15
	Alchoholism	..	..	1	..	..	..	..	1
	Other Zymotic Diseases	9	15	3	11	8	6	1	53
Const'l.	Dropsy	2	8	7	8	14	6	..	45
	Cancer	2	4	9	18	8	11	3	55
	Consumption	14	68	78	85	119	41	8	413
	Other Constitutional	1	6	7	7	7	7	1	36
Nervous.	Apoplexy	7	10	8	16	13	5	2	61
	Congestion of Brain	2	2	4	2	3	2	1	16
	Paralysis, Softening etc., of Brain	6	13	15	19	14	11	8	86
	Epilepsy, Convulsions	..	1	..	4	3	2	..	10
	Other Nervous	1	4	4	6	2	3	1	21
Cir'y.	Diseases of Heart	7	11	10	23	32	9	9	101
	Other Circulatory	2	..	2	1	..	..	..	5
Respiratory.	Pneumonia	19	37	24	43	37	12	5	177
	Congestion of Lungs	..	5	5	4	9	3	2	28
	Bronchitis and Pleurisy	1	5	5	10	3	2	2	28
	Abscess, Hemorrhage etc., of Lungs	2	15	8	6	13	1	1	46
	Other Respiratory	1	..	3	2	4	2	2	14
Digestive.	Diseases of Stomach	6	12	6	11	14	3	2	54
	Diseases of Bowels	7	19	10	9	17	6	2	70
	Peritonitis	5	7	9	13	4	..	3	41
	Diseases of Liver	2	8	6	13	15	4	..	48
	Other Digestive	8	7	6	10	17	6	2	56
Miscellaneous.	Diabetes	..	..	..	..	3	..	..	3
	Diseases of Kidneys	3	4	4	4	9	2	1	27
	Other Urinary	..	3	..	2	3	..	1	9
	Childbirth and Puerperal Diseases	30	51	25	45	40	6	..	197
	Diseases of Breast and Uterus	6	23	20	25	28	6	2	110
	Abscess, Hemorrhage Old Age	2	3	6	5	3	6	3	28
	Debility, Exhaustion, Prostration, etc.	2	3	4	3	9	6	2	29
	Accidents and Injuries	5	7	4	7	8	1	2	34
	Suicides	2	1	1	2	1	..	..	7
	Unknown Causes	4	4	3	3	4	4	1	24

NOTE. The Total, 2,182, includes 1 more unknown.

TABLE XI.

(A.) DISEASES AND AGES AT DEATH OF 35,442 INSURED MALES.

	DISEASES.	9½-19½	19½-29½	29½-39½	39½-49½	49½-59½	59½-69½	69½-79½	79½-89½	Total.
	All Causes.	133	3,476	9,321	10,840	7,576	3,357	647	92	35,442
SUMMARY.	Zymotic	54	903	1,866	1,943	1,137	390	58	5	6,356
	Constitutional	22	1,117	2,691	2,441	1,342	484	76	2	8,175
	Nervous	9	238	997	1,576	1,410	733	135	8	5,107
	Circulatory	3	61	328	537	582	389	81	5	1,986
	Respiratory	11	370	1,168	1,524	1,117	484	88	9	4,770
	Digestive	12	216	758	1,134	811	361	45	7	3,344
	Miscellaneous	22	571	1,513	1,685	1,177	516	164	56	5,704
Zymotic.	Typhoid, Typhus	28	472	702	620	361	116	7	..	2,306
	Malarial Fever	4	72	252	286	154	58	5	..	831
	Erysipelas	..	27	86	132	85	37	6	1	374
	Dysentery	7	62	165	160	136	44	12	1	587
	Diarrhœa	3	27	77	98	74	37	10	2	328
	Cholera	5	55	134	141	73	21	2	..	431
	Alcoholism	..	6	41	55	14	1	..	..	117
	Other Zymotic	7	182	409	451	240	76	16	1	1,382
Const'l.	Dropsy	..	19	103	191	183	99	15	1	611
	Cancer	..	8	72	186	239	107	20	..	632
	Consumption	21	1,052	2,406	1,933	819	219	23	1	6,474
	Other Const'l	1	38	110	131	101	59	18	..	458
Nervous.	Apoplexy	1	42	238	500	598	279	46	1	1,705
	Congestion Brain	3	53	190	231	130	43	5	..	655
	Paralysis, Soft-ening Brain	4	109	431	663	572	355	79	6	2,236
	Epilepsy and Convulsions	..	10	48	48	25	13	2	..	130
	Other Nervous	1	24	90	134	85	43	3	1	381
Cir'y.	Diseases of Heart	3	59	307	488	553	362	78	5	1,855
	Other Circulat'y	..	2	21	49	29	27	3	..	131
Respiratory.	Pneumonia	6	183	594	882	689	305	49	3	2,711
	Congest'n Lungs	2	41	132	189	130	57	16	1	568
	Bronchitis and Pleurisy	2	42	152	202	132	62	15	4	610
	Abscess, Hem-or'age Lungs	1	90	240	192	112	42	6	..	683
	Other Respirat'y	..	14	50	59	54	18	2	1	198
Digestive.	Dis. of Stomach	3	24	124	226	159	75	16	1	628
	Dis. of Bowels	2	72	219	206	159	73	5	3	739
	Peritonitis	2	35	73	77	42	15	1	1	246
	Dis. of Liver	2	37	209	410	266	101	11	2	1,038
	Other Digestive	3	48	133	215	185	97	12	..	693
Miscellaneous.	Diabetes	..	5	32	58	26	33	4	..	158
	Dis. of Kidneys	4	59	160	291	239	107	25	1	886
	Other Urinary	..	11	31	53	78	82	25	2	282
	Childbirth, Puerperal Dis.	..	..	..	..	..	..	..	..	..
	Dis. Breast and Uterus	..	..	..	..	..	..	..	..	..
	Abscess, Hem-or'age, Old Age	1	16	77	77	55	37	52	25	339
	Debility, Exhaustion, etc.	..	21	60	88	102	79	25	2	378
	Accid'ts, Injuries	16	365	894	820	449	119	15	..	2,678
	Suicides	1	49	126	173	106	18	2	..	475
	Unknown Causes	..	45	133	125	122	41	16	26	508

TABLE XI.

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(B.) DISEASES AND AGES AT DEATH OF 2,182 INSURED FEMALES.

	DISEASES.	9½-19½	19½-29½	29½-39½	39½-49½	49½-59½	59½-69½	69½-79½	79½-89½	Total.
	All Causes.	18	360	698	563	317	164	51	11	2,182
SUMMARY.	Zymotic	6	48	98	75	51	17	6	2	303
	Constitutional	5	99	195	158	70	20	2	0	549
	Nervous	..	26	45	44	40	29	9	2	194
	Circulatory	..	5	22	34	22	18	5	..	106
	Respiratory	..	36	78	78	48	34	12	1	293
	Digestive	3	33	89	73	47	24	5	..	269
	Miscellaneous	4	113	171	101	39	22	12	6	468
Zymotic.	Typhoid, Typhus	2	25	33	32	21	5	..	..	118
	Malarial Fever	1	2	15	15	9	5	1	1	49
	Erysipelas	..	1	2	1	5	1	..	..	10
	Dysentery	..	4	11	7	5	5	3	1	35
	Diarrhœa	1	4	14	2	1	..	..	..	22
	Cholera	1	4	5	4	1	..	..	..	15
	Alcoholism	..	..	..	..	1	..	..	..	1
	Other Zymotic	1	8	18	14	8	1	2	..	53
Const'l.	Dropsy	..	2	12	15	15	4	..	..	45
	Cancer	..	1	5	24	16	4	2	..	55
	Consumption	3	91	165	105	38	10	..	..	413
	Other Const'l	2	5	13	14	1	2	..	..	36
Nervous.	Apoplexy	..	4	10	14	19	9	3	1	61
	Congestion Brain	..	3	8	2	2	2	..	..	16
	Paralysis, Soft-ening Brain	..	12	21	22	15	12	6	1	86
	Epilepsy and Convulsions	..	1	1	3	2	1	..	..	10
	Other Nervous	..	6	5	3	2	5	..	.	21
Cir'y.	Diseases of Heart	..	5	21	31	22	17	5	..	101
	Other Circulat'y	..	..	1	3	..	1	..	..	5
Respiratory.	Pneumonia	..	18	45	53	26	27	7	..	177
	Congest'n Lungs	..	4	8	6	4	1	3	1	28
	Bronchitis and Pleurisy	..	4	9	6	5	4	1	..	28
	Abscess, Hem-or'age Lungs	..	8	13	11	8	2	..	..	46
	Other Respirat'y	..	2	3	2	5	..	1	..	14
Digestive.	Dis. of Stomach	..	6	19	11	5	7	5	..	54
	Dis. of Bowels	1	9	27	15	14	5	..	..	70
	Peritonitis	1	9	17	7	5	2	..	..	41
	Dis. of Liver	..	3	16	20	9	3	..	..	48
	Other Digestive	1	6	10	20	14	7	..	..	56
Miscellaneous.	Diabetes	..	..	..	2	1	..	..	..	3
	Dis. of Kidneys	..	5	9	8	4	..	1	..	27
	Other Urinary	..	1	3	..	4	1	..	..	9
	Childbirth, Pu-erperal Dis.	3	66	94	34	..	..	..	..	197
	Dis. Breast and Uterus	1	22	34	33	15	4	1	..	110
	Abscess, Hem-or'age, Old Age	..	1	7	5	..	5	5	4	28
	Debility, Ex-haustion, etc.	..	4	7	4	3	8	1	2	29
	Accid'ts, Injuries	..	6	13	6	6	3	1	..	34
	Suicides	..	3	..	2	2	..	..	..	7
	Unknown Causes	..	5	4	7	4	1	3	..	24

(A) MALE LIFE. DISEASES AND NUMBER OF DEATHS BY STATES AND TERRITORIES.

	Typhoid and Typhus.	Other Zymotic.	Consumption.	Other Constitutional.	Apoplexy.	Other Nervous.	Diseases of Heart.	Pneumonia.	Other Respiratory.	Digestive System.	Diseases of Kidneys.	Accidents and Injuries.	Suicides.	All other Diseases.	All Causes.
Alabama	10	50	26	7	10	23	12	20	22	40	5	26	3	6	260
Arkansas	..	21	6	3	2	8	4	11	1	10	..	11	..	5	82
California	38	78	121	38	47	84	67	63	38	65	20	92	24	30	805
Colorado	1	1	3	1	2	1	1	2	2	2	..	6	1	1	24
Connecticut	179	165	314	96	67	148	131	108	71	122	42	103	19	83	1648
Delaware	4	11	10	4	3	3	2	7	2	11	..	3	..	..	60
Dist. of Col'bia	7	23	50	7	9	21	9	19	13	17	4	8	4	12	203
Florida	1	10	10	..	..	4	6	3	3	2	..	7	..	2	48
Georgia	8	45	20	6	12	20	7	16	14	25	2	14	1	7	197
Idaho	1	..	..	..	..	1	..	..	..	..	..	4	..	..	6
Illinois	151	270	398	106	92	233	105	235	134	261	46	206	25	76	2338
Indiana	63	135	181	37	24	92	38	126	68	98	11	83	12	28	996
Iowa	33	65	97	28	19	73	36	46	38	62	11	39	9	22	578
Kansas	11	21	19	7	1	14	3	13	5	13	4	22	4	4	141
Kentucky	19	73	93	24	33	49	26	53	33	49	8	57	19	21	557
Louisiana	9	112	54	12	18	44	13	15	14	50	10	31	2	14	398
Maine	74	114	158	47	18	79	34	48	50	64	12	73	12	33	816
Maryland	54	104	176	57	59	113	66	82	57	91	22	49	6	43	979
Massachusetts	297	392	857	229	182	379	244	245	207	275	136	359	51	255	4108
Michigan	69	105	162	41	40	77	51	91	55	95	13	88	21	37	945
Minnesota	43	20	70	9	21	29	20	30	25	30	9	40	2	8	356
Mississippi	7	54	26	9	13	14	9	20	10	24	2	19	1	12	220
Missouri	75	277	178	49	66	122	49	101	71	120	16	99	17	62	1302
Mon. Neb. Nev.	9	13	11	5	2	14	2	10	6	14	1	16	1	4	108
New Hamps're	58	60	110	22	33	65	23	40	40	56	13	41	5	34	600
New Jersey	54	97	249	44	49	97	74	73	46	95	32	52	11	56	1029
New Mexico	..	..	..	..	1	..	3	..	1	..	..	..	..	1	6
New York	449	643	1431	395	424	768	474	572	473	661	290	422	95	346	7443
N. Carolina	7	39	25	7	6	14	8	17	11	29	3	9	..	6	181
Ohio	140	232	408	91	111	203	91	166	160	233	38	185	33	95	2186
Oregon	2	3	8	3	3	1	1	3	3	3	..	5	1	..	36
Pennsylvania	199	264	575	167	135	291	195	174	157	326	85	174	35	170	2947
Rhode Island	15	38	80	24	26	42	29	30	11	35	10	16	3	18	377
S. Carolina	3	13	14	6	10	10	4	9	7	17	3	2	..	3	101
Tennessee	8	160	63	8	24	22	16	27	16	46	4	27	6	14	441
Texas	7	51	20	10	9	18	6	20	13	34	1	21	5	10	225
Utah	..	..	..	..	1	3	..	1	1	2	..	1	..	..	9
Vermont	25	33	58	8	13	24	17	23	15	29	1	21	2	12	281
Virginia	15	33	34	5	13	17	17	14	9	17	3	20	1	7	205
Washington	..	1	1	..	1	1	..	2	..	..	..	..	..	..	6
West Virginia	5	6	13	1	10	10	2	7	5	15	..	5	1	4	84
Wisconsin	121	142	227	71	46	106	51	114	86	145	17	139	33	64	1362
Unknown	1	5	2	1	..	..	..	4	1	1	1	4	1	24	45
Brit'h America	29	37	73	9	23	45	24	35	45	39	10	46	5	19	439
Other Foreign	6	33	41	11	25	21	17	16	17	22	2	33	3	17	264
Total	2307	4049	6472	1705	1703	3403	1987	2711	2056	3345	887	2678	474	1665	35442

TABLE XII. 191

(B) FEMALE LIFE. DISEASES AND NUMBER OF DEATHS BY STATES AND TERRITORIES.

	Typhoid and Typhus.	Other Zymotic.	Consumption.	Other Constitutional.	Apoplexy.	Other Nervous.	Diseases of Heart.	Pneumonia.	Other Respiratory.	Digestive System.	Diseases of Kidneys.	Childbirth and Puerperal Diseases.	Diseases of Breast and Uterus.	All other Diseases.	All Causes.
Alabama	2	3	3	3	..	2	..	1	3	..	..	3	..	1	21
Arkansas	..	..	..	1	..	..	..	1	..	..	..	..	1	..	3
California	.	2	4	2	..	2	2	1	1	5	..	6	2	6	33
Colorado	.	..	..		..			..	..	..	..		..	..	..
Connecticut	14	16	36	10	6	19	7	7	10	20	2	9	5	13	174
Delaware	..	1	2	..	..	..	1	..	1	2	..	..	1	..	8
Dist. of Col'bia	..	2	3	..	..	..	1	2	..	2	..	..	1	1	12
Florida	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Georgia	..	7	2	..	1	..	1	3	..	4	..	..	2	..	20
Idaho	..	..	..	..	..	..				..			..	..	..
Illinois	11	15	35	7	2	7	9	7	10	23	..	19	8	16	169
Indiana	11	12	9	2	4	3	4	20	5	13	..	10	5	5	103
Iowa	5	5	11	2	1	3	4	3	4	8	1	5	3	..	55
Kansas	1	3	..	..	1	..	..	..	2	2	..	1	1	2	13
Kentucky	..	6	3	1	..	..	..	4	3	3	1	4	3	..	28
Louisiana	..	2	1	1	1	1	..	1	..	2	..	..	..	2	11
Maine	..	1	5	..	1	1	..	..	2	1	..	2	..	..	13
Maryland	2	4	16	5	4	7	4	4	2	11	4	3	3	3	72
Massachusetts	7	15	52	17	4	12	12	14	8	23	3	29	8	16	220
Michigan	4	8	19	11	3	4	4	7	5	8	1	6	7	6	93
Minnesota	1	1	1	..	..	..	..	3	..	3	..	6	..	..	15
Mississippi	3	3	1	1	1	..	1	2	..	3	..	1	1	1	18
Missouri	4	6	6	4	2	2	1	7	3	10	..	8	2	3	58
Mon. Neb. Nev.	..	..	..	..	..	..	1	..	..	1	..	1	..	1	4
New Hamps're	5	..	15	5	1	3	2	5	3	9	1	6	1	2	58
New Jersey	5	..	14	3	5	3	4	4	5	5	2	5	2	5	62
New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New York	17	33	68	31	7	28	24	33	27	45	8	21	24	19	385
N. Carolina	..	5	2	..	3	2	1	..	..	1	..	3	1	1	19
Ohio	6	14	31	10	7	11	5	21	12	16	1	18	9	10	171
Oregon	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Pennsylvania	8	7	30	9	4	11	10	8	4	23	..	9	9	8	140
Rhode Island	..	1	6	2	3	..	..	1	2	4	..	1	..	1	21
S. Carolina	..	..	..	1	..	1	..	1	1	4	..	2	1	..	11
Tennessee	1	3	3	1	..	2	1	3	..	4	..	..	1	..	19
Texas	..	1	..	1	..	1	1	1	..	1	..	3	..	1	10
Utah	..	..	..	..	..	..			.		..	..	..	..	..
Vermont	1	1	9	2	1	1	..	2	1	3	..	3	1	2	27
Virginia	..	2	..	..	..	1	1	..	..	1	..	..	..	1	6
Washington	..	..	..	..	..	..	..			..	..	..	..	..	..
West Virginia	1	..	..	..	..	..	2	..	..	..	1	..	..	1	5
Wisconsin	7	3	13	4	1	4	1	5	1	8	2	9	5	3	66
Unknown	..	1	..	..	..	..	..	..	..	1	..	..	..	1	3
Brit'h America	2	..	6	1	..	..	1	3	1	4	..	3	3	2	26
Other Foreign	..	1	3	..	..	1	..	2	..	..	..	1	..	..	8
Total	118	184	409	138	63	132	105	176	116	273	27	198	110	133	2182

MALE LIFE (A). RATIO OF DEATHS BY EACH DISEASE TO 10,000 LIVING EXPOSED TO RISK, AN EQUAL NUMBER 10,000 IN EACH STATED PERIOD OF INSURANCE.

	DISEASES.	0-½	½-1½	1½-2½	2½-4½	4½-9½	9½-19½	19½-29½	Total.	Act'lD'th
	All Causes.	68.6	80.4	93.1	102.5	114.5	140.9	213.5	102.0	35,442
SUMMARY.	Zymotic	23.7	19.0	18.8	17.1	16.3	17.5	21.1	18.3	6,356
	Constitutional	6.3	15.3	22.5	27.5	30.0	32.3	32.4	23.5	8,175
	Nervous	8.3	9.6	11.8	14.1	17.2	25.6	43.8	14.7	5,107
	Circulatory	2.1	3.0	4.0	5.4	7.3	11.3	25.0	5.7	1,986
	Respiratory	8.9	11.9	12.6	13.6	15.0	19.1	29.4	13.7	4,770
	Digestive	6.0	7.6	9.2	9.3	10.7	13.8	18.7	9.6	3,344
	Miscellaneous	13.3	14.0	14.2	15.5	18.0	21.3	43.1	16.5	5,704
Zymotic.	Typhoid,Typhus	8.9	7.4	7.2	6.2	5.7	5.6	7.2	6.6	2,306
	Malarial Fever	3.0	2.5	2.4	2.3	2.1	2.1	2.3	2.4	831
	Erysipelas	.6	.6	1.1	1.0	1.3	1.8	2.1	1.1	374
	Dysentery	2.6	1.6	1.5	1.6	1.4	1.8	2.7	1.7	587
	Diarrhœa	.8	.8	1.0	.9	.8	1.6	2.1	1.0	328
	Cholera	2.8	1.5	1.3	1.0	.8	.7	.4	1.2	431
	Alcoholism	.2	.4	.3	.4	.3	.6	..	.3	117
	Other Zymotic	4.8	4.2	4.0	3.7	3.9	3.3	4.3	4.0	1,382
Const'l.	Dropsy	.7	1.1	1.3	1.9	2.0	3.3	4.1	1.8	611
	Cancer	.4	.9	1.0	2.0	2.5	3.3	7.8	1.8	632
	Consumption	4.3	12.4	19.0	22.3	24.1	23.7	15.9	18.6	6,474
	Other Const'l	.9	.9	1.2	1.3	1.4	2.0	4.6	1.3	458
Nervous.	Apoplexy	3.2	3.3	4.1	4.7	5.3	8.6	17.0	4.9	1,705
	CongestionBrain	1.8	1.6	1.7	1.9	2.0	2.2	2.7	1.9	655
	Paralysis,Soft-ening Brain	2.8	3.9	4.7	5.9	8.2	12.2	19.9	6.4	2,236
	Epilepsy and Convulsions	.1	.2	.4	.5	.4	.6	.5	.4	130
	Other Nervous	.4	.6	.9	1.1	1.3	2.0	3.7	1.1	381
Cir'y	Diseasesof Heart	1.8	2.7	3.8	5.1	6.8	10.7	23.4	5.3	1,855
	Other Circulat'y	.3	.3	.2	.3	.5	.6	1.6	.4	131
Respiratory.	Pneumonia	5.4	7.0	7.2	7.6	8.6	10.7	15.9	7.8	2,711
	Congest'n Lungs	1.2	1.4	1.6	1.4	1.6	2.4	4.4	1.6	568
	Bronchitis and Pleurisy	6.	1.4	1.4	2.0	1.9	2.6	5.6	1.7	610
	Abscess, Hem-or'age Lungs	1.3	1.6	1.8	2.1	2.3	2.6	2.1	2.0	683
	Other Respirat'y	.4	.5	.6	.5	.6	.8	1.4	.6	198
Digestive.	Dis. of Stomach	1.0	1.3	1.8	1.8	1.8	3.3	4.1	1.8	628
	Dis. of Bowels	1.7	1.8	2.0	2.1	2.2	2.9	3.2	2.1	739
	Peritonitis	.5	.8	.7	.6	.7	.6	1.4	.7	246
	Dis. of Liver	1.2	2.1	3.0	3.0	3.7	4.2	5.2	3.0	1,038
	Other Digestive	1.6	1.6	1.7	1.8	2.3	2.8	4.8	2.0	693
Miscellaneous.	Diabetes	.1	.3	.2	.4	.7	.7	2.5	.5	158
	Dis. of Kidneys	.9	1.3	2.0	2.3	3.4	4.8	9.0	2.5	886
	Other Urinary	.2	.4	.5	.7	1.0	1.9	5.0	.8	282
	Childbirth, Pu-erperal Dis.	..	..	..	..	..	..	..	..	..
	Dis. Breast and Uterus	..	..	..	..	..	..	..	..	..
	Abscess, Hem-or'age,Old Age	.3	.7	.6	.8	.9	1.7	11.8	1.0	339
	Debility, Ex-haustion, etc.	.2	.6	.7	1.0	1.4	2.1	6.8	1.1	378
	Accid'ts, Injuries	9.4	8.3	7.7	7.6	7.4	6.8	5.1	7.7	2,678
	Suicides	1.0	1.3	1.4	1.3	1.6	1.3	2.0	1.4	475
	UnknownCauses	1.2	1.1	1.1	1.4	1.6	2.0	.9	1.5	508
	Actual Deaths	2,445	5,161	4,651	7,803	10,062	4,089	1,197	35,442	35,442
	Exposed to Risk	356,210	640,900	499,870	757,120	876,050	290,150	56,035	3,476,335	3,476,335

TABLE XIII. 193

(B.) FEMALE LIFE. RATIO OF DEATHS BY EACH DISEASE TO 10,000 LIVING EXPOSED TO RISK, AN EQUAL NUMBER 10,000 IN EACH STATED PERIOD OF INSURANCE.

	DISEASES.	Duration or Years of Insurance.							Total.	Actual Deaths.
		0-½	½-1½	1½-2½	2½-4½	4½-9½	9½-19½	19½-29½		
	All Causes.	85.9	103.9	114.1	109.2	123.8	148.3	175.8	114.9	2,182
SUMMARY.	Zymotic	21.2	15.6	15.3	14.3	13.8	16.8	5.7	16.1	302
	Constitutional	8.0	22.4	34.2	28.0	35.8	51.7	31.6	28.8	547
	Nervous	7.3	7.5	10.5	10.1	8.4	18.3	28.8	10.2	195
	Circulatory	4.0	2.9	4.1	5.4	7.7	7.2	25.9	5.5	105
	Respiratory	9.3	16.2	15.2	15.4	16.0	15.1	31.8	15.3	292
	Digestive	12.3	13.8	12.4	13.3	16.2	15.2	26.0	14.3	273
	Miscellaneous	23.8	25.5	22.4	22.7	25.9	24.0	26.0	24.7	468
Zymotic.	Typhoid,Typhus	7.0	6.3	7.0	6.2	5.3	5.6	5.7	6.3	118
	Malarial Fever	3.5	3.1	3.7	1.6	1.5	4.0	..	2.6	49
	Erysipelas	..	..	..	.7	1.0	..	..	.5	10
	Dysentery	3.1	..	1.6	1.4	2.9	2.4	..	1.9	35
	Diarrhœa	1.8	1.8	1.0	.9	.7	..	..	1.2	22
	Cholera	1.8	.5	1.0	.9	.5	..	..	.8	15
	Alcoholism	..	..	..	..	..	..	..	.1	1
	Other Zymotic	4.0	3.9	1.0	2.6	1.9	4.8	..	2.7	52
Const'l.	Dropsy	.9	2.1	2.4	1.9	3.4	4.8	..	2.6	49
	Cancer	.9	1.0	3.0	4.3	1.9	8.7	8.6	2.7	51
	Consumption	6.2	17.7	26.4	20.1	28.8	32.6	23.0	21.5	409
	Other Const'l	..	1.6	2.4	1.7	1.7	5.6	..	2.0	38
Nervous.	Apoplexy	3.1	2.6	2.7	2.8	3.1	4.0	5.8	3.3	63
	Congestion Brain	.9	.5	1.3	.5	.7	1.6	..	.9	16
	Paralysis, Softening Brain	3.3	3.4	5.1	4.5	3.4	8.7	23.0	4.5	86
	Epilepsy and Convulsions	..	..	..	.9	.7	1.6	..	.4	9
	Other Nervous	..	1.0	1.4	1.4	.5	2.4	..	1.1	21
Cir'y.	Diseases of Heart	3.1	2.9	3.4	5.4	7.7	7.2	25.9	5.2	100
	Other Circulat'y	.9	..	.7	..	..	..	..	.3	5
Respiratory.	Pneumonia	8.4	9.7	8.1	10.2	9.0	9.5	14.4	9.3	176
	Congest'n Lungs	..	1.3	1.7	.9	2.2	2.4	5.8	1.5	30
	Bronchitis and Pleurisy	..	1.3	1.7	2.4	.7	1.6	5.8	1.6	31
	Abscess, Hemor'age Lungs	.9	3.9	2.7	1.4	3.1	..	..	2.2	42
	Other Respirat'y	..	..	1.0	.5	1.0	1.6	5.8	.7	13
Digestive.	Dis. of Stomach	2.6	3.1	2.0	2.6	3.4	2.4	5.8	2.7	52
	Dis. of Bowels	3.1	5.0	3.4	2.1	4.1	4.8	5.8	3.6	69
	P ritonitis	2.2	1.8	3.0	3.1	1.0	..	8.6	2.1	41
	Dis. of Liver	.9	2.1	2.0	3.1	3.6	3.2	..	2.8	53
	Other Digestive	3.5	1.8	2.0	2.4	4.1	4.8	5.8	3.1	58
Miscellaneous.	Diabetes	..	..	..	..	.7	..	..	.2	3
	Dis. of Kidneys	1.3	1.0	1.3	.9	2.2	1.6	..	1.5	27
	Other Urinary	..	.8	..	.4	.7	:.	..	.5	9
	Childbirth, Puerperal Dis.	13.2	13.3	8.5	10.7	9.7	4.8	..	10.4	198
	Dis. Breast and Uterus	2.6	6.0	6.8	5.9	6.8	4.8	5.8	5.8	110
	Abscess, Hemor'age, Old Age	.9	.8	2.0	1.2	.7	4.8	8.6	1.5	28
	Debility, Exhaustion, etc.	.9	.8	1.4	.7	2.2	4.8	5.8	1.6	31
	Accid'ts, Injuries	2.2	1.8	1.4	1.7	1.9	..	5.8	1.7	32
	Suicides	.9	..	..	.5	..	..	..	.3	7
	Unknown Causes	1.8	1.0	1.0	.7	1.0	3.2	..	1.2	23
	Actual Deaths	197	403	341	467	513	190	70	2,182	2,182
	Exposed to Risk	22,610	38,142	29,431	42,032	41,124	12,529	3,458	189,340	189,340

MALE LIFE (A).   RATIO OF DEATHS BY EACH DISEASE TO 10,000 LIVING EXPOSED TO RISK, AN EQUAL NUMBER 10,000 IN EACH PERIOD OF AGE.

	DISEASES.	Ages of Exposure.								
		9½-19½	19½-29½	29½-39½	39½-49½	49½-59½	59½-69½	69½-79½	79½-89½	AllAges
	All Causes.	75.7	74.8	76.0	97.5	146.0	270.4	538.0	1389.7	102.0
SUMMARY.	Zymotic	30.7	19.5	15.2	17.5	21.9	31.4	48.2	75.5	18.3
	Constitutional	12.6	24.0	22.0	22.0	25.9	39.0	63.2	30.2	23.5
	Nervous	5.1	5.1	8.1	14.2	27.2	59.0	112.3	120.9	14.7
	Circulatory	1.7	1.3	2.7	4.8	11.2	31.3	67.4	75.5	5.7
	Respiratory	6.3	8.0	9.5	13.7	21.5	39.0	73.2	135.9	13.7
	Digestive	6.8	4.7	6.2	10.2	15.6	29.1	37.4	105.7	9.6
	Miscellaneous	12.5	12.3	12.3	15.1	22.7	41.6	136.4	845.8	16.5
Zymotic.	Typhoid,Typhus	15.9	10.2	5.7	5.6	7.0	9.3	5.8	..	6.6
	Malarial Fever	2.3	1.6	2.1	2.6	3.0	4.7	4.2	..	2.4
	Erysipelas	..	.6	.7	1.2	1.6	3.0	5.0	15.1	1.1
	Dysentery	4.0	1.3	1.3	1.4	2.6	3.5	10.0	15.1	1.7
	Diarrhœa	1.7	.6	.6	.9	1.4	3.0	8.3	30.2	1.0
	Cholera	2.8	1.2	1.1	1.3	1.4	1.7	1.7	..	1.2
	Alcoholism	..	.1	.3	.5	.3	.1	..	..	.3
	Other Zymotic	4.0	3.9	3.3	4.1	4.6	6.1	13.3	15.1	4.0
Const'l.	Dropsy	..	.4	.8	1.7	3.5	8.0	12.5	15.1	1.8
	Cancer	..	.2	.6	1.7	4.6	8.6	16.6	..	1.8
	Consumption	12.0	22.7	19.6	17.4	15.8	17.6	19.1	15.1	18.6
	Other Const'l	.6	.8	.9	1.2	2.0	4.8	15.0	..	1.3
Nervous.	Apoplexy	.6	.9	1.9	4.5	11.5	22.5	38.3	15.1	4.9
	CongestionBrain	1.7	1.1	1.5	2.1	2.5	3.5	4.2	..	1.9
	Paralysis,Soft-ening Brain	2.3	2.3	3.5	6.0	11.0	28.6	65.7	90.6	6.4
	Epilepsy and Convulsions	..	.2	.4	.4	.5	1.1	1.7	..	.4
	Other Nervous	.6	.5	.7	1.2	1.6	3.5	2.5	15.1	1.1
Cir'y.	Diseasesof Heart	1.7	1.3	2.5	4.4	10.7	29.2	64.9	75.5	5.3
	Other Circulat'y	..	..	.2	.4	.6	2.2	2.5	..	.4
Respiratory.	Pneumonia	3.4	3.9	4.8	7.9	13.3	24.6	40.8	45.3	7.8
	Congest'n Lungs	1.1	.9	1.1	1.7	2.5	4.6	13.3	15.1	1.6
	Bronchitis and Pleurisy	1.1	.9	1.2	1.8	2.6	5.0	12.5	60.4	1.7
	Abscess, Hem-or'age Lungs	.6	1.9	2.0	1.7	2.2	3.4	5.0	..	2.0
	Other Respirat'y	..	.3	.4	.5	1.0	1.5	1.7	..	.6
Digestive.	Dis. of Stomach	1.7	.5	1.0	2.0	3.1	6.0	13.3	15.1	1.8
	Dis. of Bowels	1.1	1.5	1.8	1.9	3.1	5.9	4.2	45.3	2.1
	Peritonitis	1.1	.8	.6	.7	.8	1.2	..	..	.7
	Dis. of Liver	1.1	.8	1.7	3.7	5.1	8.1	9.1	30.2	3.0
	Other Digestive	1.7	1.0	1.1	1.9	3.6	7.8	10.0	..	2.0
Miscellaneous.	Diabetes	..	.1	.3	.5	.5	2.6	3.3	..	0.5
	Dis. of Kidneys	2.3	1.3	1.3	2.6	4.6	8.6	20.8	15.1	2.5
	Other Urinary	..	.2	.3	.5	1.5	6.6	20.8	30.2	.8
	Childbirth, Pu-erperal Dis.	..	..	..	..	..	..	..	..	..
	Dis. Breast and Uterus	..	..	..	..	..	..	..	..	..
	Abscess, Hem-or'age,Old Age	.6	.3	.6	.7	1.1	3.0	43.2	377.6	1.0
	Debility, Ex-haustion, etc.	..	.5	.5	.8	2.0	6.4	20.8	30.2	1.1
	Accid'ts, Injuries	9.1	7.9	7.3	7.4	8.7	9.6	12.5	..	7.7
	Suicides	.6	1.1	1.0	1.6	2.0	1.5	1.7	..	1.4
	UnknownCauses	..	1.0	1.1	1.1	2.4	3.3	13.3	392.7	1.5
	Actual Deaths	133	3,476	9,321	10,840	7,576	3,357	647	92	35,442
	Exposed to Risk	17,576	464,444	1,226,542	1,112,191	518,747	124,148	12,025	662	3,476,335

TABLE XIV.   195

FEMALE LIFE (B). RATIO OF DEATHS BY EACH DISEASE TO 10,000 LIVING EXPOSED
TO RISK, AN EQUAL NUMBER 10,000 IN EACH PERIOD OF AGE.

DISEASES.		Ages of Exposure.						All Ages.	Act'l Deaths
		$19\frac{1}{2}$-$29\frac{1}{2}$	$29\frac{1}{2}$-$39\frac{1}{2}$	$39\frac{1}{2}$-$49\frac{1}{2}$	$49\frac{1}{2}$-$59\frac{1}{2}$	$59\frac{1}{2}$-$69\frac{1}{2}$	$69\frac{1}{2}$-$79\frac{1}{2}$		
All Causes.		104.7	101.4	106.5	134.7	262.7	630.2	114.9	2,182
SUMMARY.	Zymotic	14.1	14.2	14.2	21.6	27.2	74.2	16.1	302
	Constitutional	28.7	28.4	29.9	29.8	32.0	24.6	28.8	547
	Nervous	7.6	6.5	8.3	17.1	46.5	111.3	10.2	195
	Circulatory	1.4	3.3	6.5	9.4	28.8	61.8	5.5	105
	Respiratory	10.5	11.3	14.7	20.3	54.4	148.3	15.3	292
	Digestive	9.5	12.9	13.8	19.9	38.5	61.8	14.3	273
	Miscellaneous	32.9	24.8	19.1	16.6	35.3	148.2	24.7	468
Zymotic.	Typhoid, Typhus	7.3	4.7	6.0	8.9	8.0	..	6.3	118
	Malarial Fever	.6	2.2	2.7	3.9	8.0	12.4	2.6	49
	Erysipelas	.3	.3	.2	2.1	1.6	..	.5	10
	Dysentery	1.2	1.6	1.4	2.1	8.0	37.1	1.9	35
	Diarrhœa	1.2	2.0	.4	.4	..	..	1.2	22
	Cholera	1.2	.8	.8	.4	..	..	.8	15
	Alcoholism	..	..	..	.4	..	..	.1	1
	Other Zymotic	2.3	2.6	2.7	3.4	1.6	24.7	2.7	52
Const'l.	Dropsy	.6	1.7	2.8	6.4	6.4	..	2.6	49
	Cancer	.3	.8	4.6	6.8	6.4	24.6	2.7	51
	Consumption	26.4	24.0	19.8	16.2	16.0	..	21.5	409
	Other Const'l	1.4	1.9	2.7	.4	3.2	..	2.0	38
Nervous.	Apoplexy	1.2	1.4	2.6	8.0	14.5	37.1	3.3	63
	Congestion Brain	.9	1.2	.4	.9	3.2	..	.9	16
	Paralysis, Soft-ening Brain	3.5	3.0	4.1	6.4	19.2	74.2	4.5	86
	Epilepsy and Convulsions	.3	.2	.6	.9	1.6	..	.4	9
	Other Nervous	1.7	.7	.6	.9	8.0	..	1.1	21
Cir'y	Diseases of Heart	1.4	3.1	5.9	9.4	27.2	61.8	5.2	100
	Other Circulat'y	..	.2	.6	..	1.6	..	.3	5
Respiratory.	Pneumonia	5.2	6.5	10.0	11.0	43.2	86.6	9.3	176
	Congest'n Lungs	1.2	1.2	1.1	1.7	1.6	37.1	1.5	30
	Bronchitis and Pleurisy	1.2	1.3	1.1	2.1	6.4	12.3	1.6	31
	Abscess, Hem-or'age Lungs	2.3	1.9	2.1	3.4	3.2	..	2.2	42
	Other Respirat'y	.6	.4	.4	2.1	..	12.3	.7	13
Digestive.	Dis. of Stomach	1.7	2.7	2.1	2.1	11.2	61.8	2.7	52
	Dis. of Bowels	2.6	3.9	2.8	5.9	8.0	..	3.6	69
	Peritonitis	2.6	2.5	1.4	2.1	3.3	..	2.1	41
	Dis. of Liver	.9	2.3	3.8	3.9	4.8	..	2.8	53
	Other Digestive	1.7	1.5	3.7	5.9	11.2	..	3.1	58
Miscellaneous.	Diabetes	..	..	.4	.4	..	..	.2	3
	Dis. of Kidneys	1.4	1.3	1.6	1.7	..	12.3	1.5	27
	Other Urinary	.3	.4	..	1.7	1.6	..	.5	9
	Childbirth, Pu-erperal Dis.	19.3	13.6	6.3	..	..	..	10.4	198
	Dis. Breast and Uterus	6.4	5.0	6.2	6.4	6.4	12.3	5.8	110
	Abscess, Hem-or'age, Old Age	.3	1.0	.9	..	8.1	61.8	1.5	28
	Debility, Ex-haustion, etc.	1.2	1.0	.8	1.3	12.8	12.4	1.6	31
	Accid'ts, Injuries	1.7	1.9	1.1	2.5	4.8	12.3	1.7	32
	Suicides	.9	..	.4	.9	..	..	.3	7
	Unknown Causes	1.4	6	1.4	1.7	1.6	37.1	1.2	23
Actual Deaths		360	698	563	317	164	51	2,182	2,182
Exposed to Risk		34,427	68,769	52,783	23,536	6,245	809	189,340	189,340

TABLE XV.

(A.) MALE LIFE. PERCENTAGE DISTRIBUTION OF DISEASES AMONG 100 DEATHS, THE SAME NUMBER 100 IN EACH PERIOD OF INSURANCE.

	DISEASES.	Duration or Years of Insurance.							
		$0 - \frac{1}{2}$	$\frac{1}{2} - 1\frac{1}{2}$	$1\frac{1}{2} - 2\frac{1}{2}$	$2\frac{1}{2} - 4\frac{1}{2}$	$4\frac{1}{2} - 9\frac{1}{2}$	$9\frac{1}{2} - 19\frac{1}{2}$	$19\frac{1}{2} - 29\frac{1}{2}$	Total.
	All Causes.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SUMMARY.	Zymotic Diseases	34.5	23.6	20.3	16.7	14.1	12.5	9.9	17.9
	Constitutional Diseases	9.2	18.9	24.2	26.8	26.1	23.0	15.2	23.1
	Nervous Diseases	12.1	12.1	12.7	13.8	15.2	18.1	20.6	14.4
	Circulatory Diseases	3.1	3.6	4.3	5.2	6.3	8.1	11.7	5.6
	Respiratory Diseases	12.8	14.8	13.3	13.2	13.1	13.5	13.8	13.5
	Digestive Diseases	8.8	9.6	10.0	9.2	9.5	9.8	8.8	9.5
	Miscellaneous Diseases	19.5	17.4	15.2	15.1	15.7	15.0	20.0	16.0
Zymotic.	Typhoid, Typhus Fever	13.0	9.2	7.7	6.0	4.9	3.9	3.3	6.5
	Malarial Fever	4.4	3.1	2.7	2.3	1.8	1.5	1.1	2.3
	Erysipelas	.9	.8	1.2	1.0	1.1	1.3	1.0	1.1
	Dysentery	3.8	2.0	1.6	1.6	1.2	1.3	1.3	1.7
	Diarrhœa	1.1	.9	1.1	.8	.7	1.2	1.0	.9
	Cholera	4.2	1.9	1.4	1.0	.7	.5	.2	1.2
	Alcoholism	.3	.5	.3	.4	.3	.4	..	.3
	Other Zymotic Diseases	6.8	5.2	4.3	3.6	3.4	2.4	2.0	3.9
Const'l.	Dropsy	1.0	1.4	1.4	1.9	1.8	2.4	1.9	1.7
	Cancer	.6	1.1	1.1	2.0	2.1	2.3	3.7	1.8
	Consumption	6.3	15.3	20.4	21.6	21.0	16.9	7.4	18.3
	Other Constitutional	1.3	1.1	1.3	1.3	1.2	1.4	2.2	1.3
Nervous.	Apoplexy	4.7	4.1	4.5	4.6	4.6	6.1	8.0	4.8
	Congestion of Brain	2.6	2.0	1.8	1.9	1.8	1.5	1.3	1.8
	Paralysis, Softening etc., of Brain	4.1	4.9	5.0	5.8	7.2	8.7	9.3	6.3
	Epilepsy, Convulsions	.2	.3	.4	.4	.4	.4	.2	.4
	Other Nervous	.5	.8	1.0	1.1	1.2	1.4	1.8	1.1
Cir'y.	Diseases of Heart	2.7	3.3	4.1	4.9	5.9	7.7	10.9	5.2
	Other Circulatory	.4	.3	.2	.3	.4	.4	.8	.4
Respiratory.	Pneumonia	7.7	8.7	7.6	7.3	7.4	7.6	7.4	7.7
	Congestion of Lungs	1.8	1.8	1.7	1.4	1.5	1.7	2.1	1.6
	Bronchitis and Pleurisy	.9	1.7	1·5	2.0	1.7	1.9	2.6	1.7
	Abscess, Hemorrhage etc., of Lungs	1.9	2.0	1.9	2.0	2.0	1.8	1.0	1.9
	Other Respiratory	.5	.6	.6	.5	.5	.5	.7	.6
Digestive.	Diseases of Stomach	1.5	1.6	2.0	1.8	1.6	2.3	1.9	1.8
	Diseases of Bowels	2.5	2.3	2.1	2.1	1.9	2.1	1.5	2.1
	Peritonitis	.7	1.0	.8	.6	.7	.4	.7	.7
	Diseases of Liver	1.8	2.6	3.3	3.0	3.3	3.0	2.4	2.9
	Other Digestive	2.3	2.1	1.8	1.7	2.0	2.0	2.3	2.0
Miscellaneous.	Diabetes	.2	.3	.2	.4	.6	.5	1.2	.4
	Diseases of Kidneys	1.3	1.6	2.1	2.3	3.0	3.4	4.2	2.5
	Other Urinary	.3	.5	.6	.7	.9	1.4	2.3	.8
	Childbirth and Puerperal Diseases	..	..	..	..	..	..	..	.
	Diseases of Breast and Uterus	..	..	..	..	..	..	..	..
	Abscess, Hemorrhage, Old Age	.4	.9	.6	.8	.8	1.2	5.5	1.0
	Debility, Exhaustion, Prostration, etc.	.3	.8	.8	1.0	1.2	1.5	3.2	1.1
	Accidents and Injuries	13.7	10.2	8.3	7.3	6.4	4.7	2.3	7.5
	Suicides	1.5	1.7	1.5	1.2	1.4	.9	.9	1.3
	Unknown Causes	1.8	1.4	1.1	1.4	1.4	1.4	.4	1.4
	Actual Deaths	2.445	5,161	4,651	7,803	10,062	4,089	1,197	35,442

TABLE XV. 197

(B). FEMALE LIFE. DURATIONS. PERCENTAGE DISTRIBUTION OF DISEASES AMONG 100 DEATHS, THE SAME NUMBER 100 IN EACH STATED PERIOD OF INSURANCE.

All Causes.	Duration or Years of Insurance.							
	0-½	½-1½	1½-2½	2½-4½	4½-9½	9½-19½	19½-29½	Total.
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Typhoid and Typhus	8.1	6.0	6.2	5.6	4.3	3.7	2.9	5.4
Other Zymotic Diseases	16.3	9.4	7.9	7.5	6.8	8.4	2.8	8.5
Consumption	7.1	16.9	22.9	18.2	23.2	21.6	11.4	18.9
Other Constitutional	2.5	4.4	6.7	7.1	5.6	12.6	5.7	6.3
Apoplexy	3.6	2.5	2.3	3.4	2.5	2.6	2.9	2.8
Other Nervous Diseases	4.5	4.9	6.8	6.6	4.3	9.5	14.3	6.1
Diseases of Heart	3.6	2.7	2.9	4.9	6.2	4.7	12.9	4.6
Pneumonia	9.6	9.2	7.0	9.2	7.2	6.3	7.1	8.1
Other Respiratory	2.1	6.2	6.2	4.7	5.7	4.2	10.0	5.3
Digestive System	14.2	13.2	10.9	12.0	13.1	10.0	12.8	12.3
Childbirth and Puerperal Diseases	15.2	12.7	7.3	9.6	7.8	3.2	...	9.0
Diseases of Breast and Uterus	3.1	5.7	5.9	5.4	5.5	3.2	2.9	5.1
All other Diseases	10.1	6.2	7.0	5.8	7.8	10.0	14.3	7.6

TABLE XVI.

(B.) FEMALE LIFE. AGES. PERCENTAGE DISTRIBUTION OF DISEASES AMONG 100 DEATHS, THE SAME NUMBER 100 IN EACH STATED PERIOD OF AGE,

All Causes.	Ages of Death.							
	19½-29½	29½-39½	39½-49½	49½-59½	59½-69½	69½-79½	Total.	Act'l D'ths.
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2,182
Typhoid and Typhus	6.9	4.7	5.7	6.6	3.1	. .	5.4	118
Other Zymotic Diseases	6.4	9.3	7.6	9.5	7.3	11.8	8.4	184
Consumption	25.3	23.6	18.7	12.0	6.1	. .	18.8	409
Other Constitutional	2.2	4.3	9.4	10.1	6.1	4.0	6.3	138
Apoplexy	1.1	1.4	2.5	6.0	5.5	5.9	2.9	63
Other Nervous Diseases	6.1	5.1	5.3	6.6	12.2	11.7	6.1	132
Diseases of Heart	1.4	3.0	5.5	6.9	10.4	9.8	4.6	100
Pneumonia	5.0	6.5	9.4	8.2	16.5	13.7	8.0	176
Other Respiratory	5.0	4.7	4.5	7.0	4.2	9.8	5.3	116
Digestive System	9.2	12.7	13.0	14.8	14.6	9.8	12.5	273
Childbirth and Puerperal Diseases	18.3	13.5	6.0	. .	. .	. .	9.1	198
Diseases of Breast and Uterus	6.1	4.9	5.9	4.7	2.4	2.0	5.0	110
All other Diseases	7.0	6.3	6.5	7.6	11.6	21.5	7.6	165

(A.) MALE LIFE. PERCENTAGE DISTRIBUTION OF DISEASES AMONG 100 DEATHS, THE SAME NUMBER 100 IN EACH PERIOD OF INSURANCE.

	DISEASES.	Ages of Exposure.						
		$19\frac{1}{2}$-$29\frac{1}{2}$	$29\frac{1}{2}$-$39\frac{1}{2}$	$39\frac{1}{2}$-$49\frac{1}{2}$	$49\frac{1}{2}$-$59\frac{1}{2}$	$59\frac{1}{2}$-$69\frac{1}{2}$	$69\frac{1}{2}$-$79\frac{1}{2}$	Total.
	All Causes.	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SUMMARY.	Zymotic Diseases	26.0	20.0	17.9	15.1	11.6	9.0	17.8
	Constitutional Diseases	32.1	28.9	22.5	17.7	14.4	11.7	23.1
	Nervous Diseases	6.8	10.7	14.5	18.6	21.9	20.9	14.5
	Circulatory Diseases	1.7	3.5	5.0	7.7	11.6	12.5	5.6
	Respiratory Diseases	10.7	12.5	14.0	14.8	14.4	13.6	13.4
	Digestive Diseases	6.3	8.1	10.5	10.7	10.8	6.9	9.5
	Miscellaneous Diseases	16.4	16.3	15.6	15.4	15.3	25.4	16.1
Zymotic.	Typhoid, Typhus Fever	13.5	7.5	5.7	4.8	3.5	1.1	6.5
	Malarial Fever	2.1	2.7	2.6	2.0	1.7	.8	2.3
	Erysipelas	.8	.9	1.2	1.1	1.1	.9	1.1
	Dysentery	1.8	1.8	1.5	1.8	1.3	1.9	1.6
	Diarrhœa	.8	.8	.9	1.0	1.1	1.5	.9
	Cholera	1.6	1.4	1.3	1.0	.6	.3	1.2
	Alcoholism	.2	.5	.5	.2	..	..	.3
	Other Zymotic Diseases	5.2	4.4	4.2	3.2	2.3	2.5	3.9
Const'l.	Dropsy	.5	1.1	1.8	2.4	2.9	2.3	1.8
	Cancer	.2	.8	1.7	3.2	3.2	3.1	1.7
	Consumption	30.3	25.8	17.8	10.8	6.5	3.5	18.3
	Other Constitutional	1.1	1.2	1.2	1.3	1.8	2.8	1.3
Nervous.	Apoplexy	1.2	2.6	4.6	7.9	8.3	7.1	4.8
	Congestion of Brain	1.5	2.0	2.1	1.7	1.3	.8	1.9
	Paralysis, Softening etc., of Brain	3.1	4.6	6.1	7.6	10.6	12.2	6.3
	Epilepsy, Convulsions	.3	.5	.5	.3	.4	.3	.4
	Other Nervous	.7	1.0	1.2	1.1	1.3	.5	1.1
Cir'y.	Diseases of Heart	1.6	3.3	4.5	7.3	10.8	12.0	5.2
	Other Circulatory	.1	.2	.5	.4	.8	.5	.4
Respiratory.	Pneumonia	5.3	6.4	8.1	9.1	9.1	7.6	7.6
	Congestion of Lungs	1.2	1.4	1.7	1.7	1.7	2.5	1.6
	Bronchitis and Pleurisy	1.2	1.6	1.9	1.8	1.8	2.3	1.7
	Abscess, Hemorrhage etc., of Lungs	2.6	2.6	1.8	1.5	1.3	.9	1.9
	Other Respiratory	.4	.5	.5	.7	.5	.3	.6
Digestive.	Diseases of Stomach	.7	1.3	2.1	2.1	2.2	2.5	1.8
	Diseases of Bowels	2.1	2.4	1.9	2.1	2.2	.8	2.1
	Peritonitis	1.0	.8	.7	.6	.5	..	.7
	Diseases of Liver	1.1	2.2	3.8	3.5	3.0	1.7	2.9
	Other Digestive	1.4	1.4	2.0	2.4	2.9	1.9	2.0
Miscellaneous.	Diabetes	.1	.4	.5	.3	1.0	.6	.5
	Diseases of Kidneys	1.7	1.7	2.7	3.2	3.2	3.9	2.5
	Other Urinary	.3	.3	.5	1.0	2.4	3.9	.8
	Childbirth and Puerperal Diseases	.	..	..	..	..	..	..
	Diseases of Breast and Uterus	..	..	..	..	..	..	..
	Abscess, Hemorrhage, Old Age	.5	.8	.7	.7	1.1	8.0	1.0
	Debility, Exhaustion, Prostration, etc.	.6	.7	.8	1.3	2.4	3.9	1.1
	Accidents and Injuries	10.5	9.6	7.6	5.9	3.5	2.3	7.5
	Suicides	1.4	1.4	1.6	1.4	.5	.3	1.3
	Unknown Causes	1.3	1.4	1.2	1.6	1.2	2.5	1.4
	Actual Deaths	3,476	9,321	10,840	7,576	3,357	647	35,442

TABLE XVII. 199

(A). CLIMATIC DISTRIBUTION OF DEATHS AND DISEASES AMONG 100 DEATHS OF INSURED MALES AND FEMALES.

Ages, 20—75.

Residence at Death.	North of 36°30'		South 36° 30'.		Foreign	United States.		U. S. Census 1870.	
SEX.	Male.	Fem.	Male.	Fem.	Male.	Male.	Fem.	Male.	Fem.
Deaths from all Causes.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SUMMARY Zymotic Diseases	17.3	13.3	28.4	22.5	15.0	17.8	14.0	15.9	14.5
Constitutional Diseases	23.6	25.6	15.4	16.5	19.1	23.1	24.9	32.1	37.4
Nervous Diseases	14.5	8.9	13.1	11.3	16.1	14.5	8.9	9.5	8.1
Circulatory Diseases	5.8	5.0	4.0	3.8	5.8	5.6	4.8	5.9	5.9
Respiratory Diseases	13.4	13.4	12.6	12.8	16.1	13.4	13.4	13.3	11.4
Digestive Diseases	9.2	12.2	12.9	14.3	8.7	9.5	12.6	6.5	6.6
Miscellaneous Diseases	16.2	21.6	13.6	18.8	19.2	16.1	21.4	16.8	16.1
Zymotic Typhoid, Typhus Fever	6.8	5.5	2.8	4.5	5.0	6.5	5.4	6.8	6.6
Malarial Fever	2.1	1.8	6.9	9.0	1.1	2.3	2.3	2.5	2.4
Erysipelas	1.1	.5	.9	..	.9	1.1	.5	.6	.6
Dysentery	1.5	1.5	3.4	2.2	1.7	1.6	1.6	.9	.9
Diarrhœa	.9	1.0	2.1	1.5	1.0	.9	1.0	1.7	1.4
Cholera	1.2	.7	1.4	..	.6	1.2	.7	.1	.1
Alcoholism	.3	.1	.2	..	.6	.3	.1	1.1	.3
Other Zymotic Diseases	3.4	2.2	10.7	5.3	4.1	3.9	2.4	2.2	2.2
Const'l. Dropsy	1.8	2.2	1.3	3.0	1.3	1.8	2.2	2.1	3.0
Cancer	1.8	2.4	.7	2.3	.7	1.7	2.3	1.7	2.5
Consumption	18.7	19.3	12.3	9.0	16.2	18.3	18.7	26.2	29.7
Other Constitutional	1.3	1.7	1.1	2.2	.9	1.3	1.7	2.1	2.2
Nervous. Apoplexy	4.8	2.8	4.8	4.5	6.8	4.8	2.9	2.2	1.8
Congestion of Brain	1.8	.6	2.9	3.0	1.7	1.9	.7	.3	.3
Paralysis, Softening etc., of Brain	6.4	4.0	4.4	3.0	5.8	6.3	3.9	4.0	3.4
Epilepsy, Convulsions	.4	.5	.4	..	.7	.4	.4	.7	.8
Other Nervous	1.1	1.0	.6	.8	1.1	1.1	1.0	2.3	1.8
Cir'y. Diseases of Heart	5.4	4.7	3.9	3.8	4.5	5.2	4.6	5.9	5.9
Other Circulatory	.4	.3	.1	..	1.3	.4	.2		
Respiratory. Pneumonia	7.7	7.9	7.4	9.8	7.3	7.6	8.1	10.2	8.3
Congestion of Lungs	1.6	1.5	1.3	..	1.6	1.6	1.4		
Bronchitis and Pleurisy	1.7	1.4	2.0	1.5	2.1	1.7	1.4	1.1	1.0
Abscess, Hemorrhage etc., of Lungs	1.9	2.0	1.1	.8	4.3	1.9	1.9	2.0	2.1
Other Respiratory	.5	.6	.8	.7	.8	.6	.6		
Digestive. Diseases of Stomach	1.7	2.4	3.0	1.5	1.6	1.8	2.4	1.0	1.1
Diseases of Bowels	2.0	3.0	3.4	5.3	1.7	2.1	3.2	2.6	2.4
Peritonitis	.7	1.9	.3	.8	1.0	.7	1.9	.2	.5
Diseases of Liver	2.9	2.2	2.8	4.5	2.8	2.9	2.4	2.0	1.7
Other Digestive	1.9	2.7	3.4	2.2	1.6	2.0	2.7	.7	.9
Miscellaneous. Diabetes	.5	.2	.1	..	.3	.5	.1	.4	.1
Diseases of Kidneys	2.6	1.3	1.4	..	1.7	2.5	1.2	1.9	.8
Other Urinary	.8	.4	.7	..	.3	.8	.4	.4	.1
Childbirth and Puerperal Diseases	..	9.0	..	9.0	..	..	9.1	..	6.5
Diseases of Breast and Uterus	..	5.0	..	5.3	..	..	5.0	..	2.4
Abscess, Hemorrhage, Old Age	1.0	1.4	.6	..	1.0	1.0	1.3	2.7	2.7
Debility, Exhaustion, Prostration, etc.	1.1	1.4	.7	1.5	.7	1.1	1.4		
Accidents and Injuries	7.5	1.5	7.8	1.5	11.2	7.5	1.5	9.1	1.4
Suicides	1.4	.4	.8	..	1.1	1.3	.3	.9	.3
Unknown Causes	1.3	1.0	1.5	1.5	2.9	1.4	1.1	1.4	1.8
Actual Deaths	32,544	2,012	2,153	133	703	35,442	2,182	104,531	91,898

TABLE XVII.

(B). PROPORTIONAL DEATHS AND DISEASES TO 100 TOTAL DEATHS OF INSURED MALES IN EACH GROUP OF STATES.

	Group of States.	I.*	II.	III.	IV.	V.	VI.	VII.	Mean Group	Groups.
	All Causes.	100.0	100.0	100.0	100.0	100.0	100.0	100.0		
SUMMARY.	Zymotic	16.7	19.0	15.5	17.9	21.1	28.4	14.2	19.0	I.*
	Constitutional	25.0	21.9	26.0	22.0	20.9	15.4	19.8	21.6	
	Nervous	14.7	11.8	14.4	13.8	15.4	13.1	16.4	14.2	New England.
	Circulatory	6.3	4.5	6.8	4.4	5.1	4.0	8.2	5.6	New York.
	Respiratory	12.6	14.9	11.3	15.9	13.9	12.6	13.0	13.5	
	Digestive	8.2	10.2	10.5	10.7	9.1	12.9	8.1	10.0	II.
	Miscellaneous	16.5	17.7	15.5	15.3	14.5	13.6	20.3	16.2	NORTHWEST.
Zymotic.	Typhoid,Typhus	7.2	8.8	6.4	6.4	5.3	2.8	4.6	5.9	Michigan.
	Malarial Fever	1.5	2.4	1.7	3.2	2.9	6.9	1.7	2.9	Wisconsin.
	Erysipelas	1.0	1.3	.9	1.2	1.0	.9	2.0	1.2	Minnesota.
	Dysentery	1.6	1.4	.8	1.4	2.8	3.4	1.3	1.8	Nebraska.
	Diarrhœa	.9	.7	.9	.7	1.2	2.1	.2	1.0	
	Cholera	.8	.8	1.0	1.9	2.7	1.4	.8	1.3	III.
	Alcoholism	.3	.3	.3	.4	.4	.2	.5	.3	New Jersey.
	Other Zymotic	3.4	3.3	3.5	2.7	4.8	10.7	3.1	4.5	Pennsylvania.
Const'l.	Dropsy	1.7	1.7	2.4	1.8	1.7	1.3	1.7	1.8	IV.
	Cancer	2.0	1.6	2.0	1.5	1.7	.7	1.7	1.6	
	Consumption	19.7	17.3	20.7	17.7	16.4	12.3	15.1	17.0	Ohio.
	Other Const'l	1.6	1.3	.9	1.0	1.1	1.1	1.3	1.2	Indiana.
Nervous.	Apoplexy	5.0	4.0	4.6	4.0	5.5	4.8	6.1	4.9	Illinois.
	CongestionBrain	1.4	1.5	2.0	2.4	2.2	2.9	1.5	2.0	Iowa.
	Paralysis, Softening Brain	6.9	5.3	6.1	5.9	6.0	4.4	6.5	5.9	Kansas.
	Epilepsy and Convulsions	.3	.3	.6	.4	.4	.4	1.3	.5	V.
	Other Nervous	1.1	.7	1.1	1.1	1.3	.6	1.0	1.0	Delaware.
Cir'y.	Diseasesof Heart	5.8	4.2	6.6	4.2	4.8	3.9	6.6	5.2	Maryland.
	Other Circulat'y	.5	.3	.2	.2	.3	.1	1.6	.5	Dist. Columbia.
Respiratory.	Pneumonia	7.0	8.7	6.2	9.4	8.3	7.4	8.0	7.9	Virginia.
	Congest'n Lungs	1.7	1.7	1.1	1.6	1.7	1.3	.8	1.4	Kentucky.
	Bronchitis and Pleurisy	1.7	2.0	1.4	1.9	1.4	2.0	2.0	1.8	Missouri.
	Abscess, Hemor'age Lungs	1.8	2.1	1.9	2.3	1.8	1.1	1.6	1.8	VI.
	Other Respirat'y	.4	.4	.7	.7	.7	.8	.6	.6	SOUTH OF 36° 30'.
Digestive.	Dis. of Stomach	1.5	2.4	1.9	1.8	1.6	3.0	1.2	1.9	North Carolina.
	Dis. of Bowels	1.8	2.2	2.3	2.4	1.9	3.4	1.4	2.2	South Carolina.
	Peritonitis	.7	.8	.9	.8	.5	.3	.3	.6	Tennessee.
	Dis. of Liver	2.6	2.5	3.5	3.5	3.0	2.8	3.7	3.1	Georgia.
	Other Digestive	1.6	2.3	1.9	2.2	2.1	3.4	1.5	2.1	Florida.
Miscellaneous.	Diabetes	.5	.5	.5	.4	.6	.1	.5	.4	Alabama.
	Dis. of Kidneys	3.3	1.4	2.9	1.8	1.6	1.4	2.3	2.1	Mississippi.
	Other Urinary	.9	.8	1.0	.5	.7	.7	.6	.7	Arkansas.
	Childbirth,Puerperal Dis.	..	..	..	..	..	..	..	..	Louisiana.
	Dis. Breast and Uterus	..	..	..	..	..	..	..	..	Texas.
	Abscess, Hemor'age,Old Age	1.1	.8	1.0	1.0	1.0	.6	.3	.8	VII.
	Debility, Exhaustion, etc.	1.0	1.0	2.2	.7	1.0	.7	1.1	1.1	PACIFIC, ETC.
	Accid'ts,Injuries	6.8	10.1	5.7	8.6	7.1	7.8	11.4	8.2	Washington. Oregon.
	Suicides	1.2	2.1	1.2	1.3	1.4	.8	2.9	1.6	California. Utah.
	UnknownCauses	1.7	1.0	1.0	1.0	1.1	1.5	1.2	1.2	Dakota.
	Actual Deaths	15,273	2,716	3,976	6,239	3,306	2,153	863	..	New Mexico.

TABLE XVII. 201

(C). PROPORTIONAL DEATHS AND DISEASES TO 10,000 MALES LIVING IN EACH GROUP OF STATES.

Group of States.	I.*	II.	III.	IV.	V.	VI.	VII.	Mean Group.	Groups.
All Causes.	105.3	97.7	107.1	104.5	130.5	170.5	112.2		
SUMMARY. Zymotic	17.6	18.5	16.6	18.7	27.5	48.4	15.9	23.3	I.*
Constitutional	26.4	21.4	27.9	23.0	27.3	26.3	22.1	24.9	
Nervous	15.4	11.5	15.4	14.4	20.1	22.3	18.4	16.8	New England.
Circulatory	6.6	4.4	7.3	4.6	6.7	6.8	9.2	6.5	New York.
Respiratory	13.3	14.6	12.1	16.6	18.1	21.5	14.6	15.8	
Digestive	8.6	10.0	11.2	11.2	11.9	22.0	9.1	12.0	II.
Miscellaneous	17.4	17.3	16.6	16.0	18.9	23.2	22.9	18.9	NORTHWEST.
Zymotic. Typhoid,Typhus	7.6	8.5	6.8	6.7	6.9	4.8	5.2	6.6	Michigan.
Malarial Fever	1.7	2.3	1.8	3.3	3.8	11.8	1.9	3.8	Wisconsin.
Erysipelas	1.0	1.3	1.0	1.3	1.3	1.5	2.2	1.4	Minnesota.
Dysentery	1.7	1.4	.9	1.4	3.6	5.8	1.5	2.3	Nebraska.
Diarrhœa	.9	.7	1.0	.8	1.6	3.6	.2	1.3	
Cholera	.9	.8	1.1	2.0	3.5	2.4	.9	1.7	III.
Alcoholism	.3	.3	.3	.4	.5	.3	.6	.4	New Jersey.
Other Zymotic	3.6	3.2	3.7	2.8	6.3	18.2	3.4	5.9	Pennsylvania.
Const'l. Dropsy	1.8	1.6	2.6	1.9	2.2	2.2	1.9	2.0	IV.
Cancer	2.1	1.5	2.1	1.6	2.2	1.1	1.9	1.8	
Consumption	20.8	16.9	22.2	18.5	21.5	21.0	16.9	19.7	Ohio.
Other Const'l	1.7	1.4	1.0	1.0	1.4	2.0	1.4	1.4	Indiana.
Nervous. Apoplexy	5.2	3.8	5.0	4.2	7.2	8.2	6.8	5.8	Illinois.
Congestion Brain	1.5	1.5	2.1	2.5	2.9	4.9	1.7	2.4	Iowa.
Paralysis, Softening Brain	7.2	5.2	6.5	6.2	7.8	7.5	7.3	6.8	Kansas.
Epilepsy and Convulsions	.3	.3	.6	.4	.5	.7	1.5	.6	V.
Other Nervous	1.2	.7	1.2	1.1	1.7	1.0	1.1	1.1	Delaware.
Cir'y. Diseases of Heart	6.1	4.1	7.1	4.4	6.3	6.6	7.4	6.0	Maryland.
Other Circulat'y	.5	.3	.2	.2	.4	.2	1.8	.5	Dist. Columbia.
Respiratory. Pneumonia	7.3	8.5	6.6	9.8	10.8	12.6	9.0	9.2	Virginia.
Congest'n Lungs	1.8	1.7	1.2	1.7	2.2	2.2	.9	1.7	Kentucky.
Bronchitis and Pleurisy	1.8	2.0	1.5	2.0	1.8	3.4	2.2	2.1	Missouri.
Abscess, Hem'or'age Lungs	1.9	2.0	2.0	2.4	2.4	1.9	1.8	2.1	VI.
Other Respirat'y	.4	.4	.8	.7	.9	1.4	.7	.8	SOUTH OF 36° 30'.
Digestive. Dis. of Stomach	1.6	2.3	2.0	1.9	2.1	5.1	1.3	2.3	North Carolina. South Carolina.
Dis. of Bowels	1.9	2.2	2.5	2.5	2.5	5.8	1.6	2.7	Tennessee.
Peritonitis	.7	.8	1.0	.8	.7	.5	.3	.7	Georgia.
Dis. of Liver	2.7	2.4	3.7	3.7	3.9	4.8	4.2	3.6	Florida.
Other Digestive	1.7	2.3	2.0	2.3	2.7	5.8	1.7	2.6	Alabama. Mississippi.
Miscellaneous. Diabetes	.5	.5	.5	.4	.8	.3	.6	.5	Arkansas.
Dis. of Kidneys	3.5	1.4	3.1	1.9	2.1	2.4	2.6	2.4	Louisiana.
Other Urinary	.9	.8	1.1	.5	.9	1.2	.7	.9	Texas.
Childbirth,Puerperal Dis.	..	..	..	..	..	..	..	..	VII.
Dis. Breast and Uterus	..	..	..	..	..	..	..	..	PACIFIC, ETC.
Abscess, Hem'or'age,Old Age	1.2	.8	1.1	1.1	1.3	1.0	.3	1.0	Washington. Oregon.
Debility, Exhaustion, etc.	1.0	1.0	2.4	.7	1.3	1.1	1.2	1.2	California. Utah.
Accid'ts,Injuries	7.2	9.7	6.0	9.0	9.3	13.3	12.8	9.6	Dakota.
Suicides	1.3	2.1	1.3	1.3	1.8	1.4	3.3	1.8	New Mexico.
UnknownCauses	1.8	1.0	1.1	1.1	1.4	2.5	1.3	1.5	
Actual Deaths	15,273	2,716	3,976	6,239	3,306	2,153	863	..	

TABLE XVIII.

CALENDAR AND DECIMAL PARTS OF A YEAR.

Days.	Cal.	Decimal.	Days.	Cal.	Decimal.	Days.	Cal.	Decimal.	Days.	Cal.	Decimal.	Days.	Cal.	Decimal.
0	Jan. 0	.00000000	50	Fb*19	.13698630	100	Apr.10	.27397260	150	May30	.41095890
1	*1	.00273973	51	20	.13972603	101	11	.27671233	151	31	.41369863
2	2	.00547945	52	21	.14246575	102	12	.27945205	152	June 1	.41643836
3	3	.00821918	53	22	.14520548	103	13	.28219178	153	2	.41917808
4	4	.01095890	54	23	.14794521	104	14	.28493151	154	3	.42191781
5	5	.01369863	55	24	.15068493	105	15	.28767123	155	*4	.42465753
6	6	.01643836	56	25	.15342466	106	*16	.29041096	156	5	.42739726
7	7	.01917808	57	*26	.15616438	107	17	.29315068	157	6	.43013699
8	*8	.02191781	58	27	.15890411	108	18	.29589041	158	7	.43287671
9	9	.02465753	59	28	.16164384	109	19	.29863014	159	8	.43561644
10	10	.02739726	60	Mar. 1	.16438356	110	20	.30136986	160	9	.43835616
11	11	.03013699	61	2	.16712329	111	21	.30410959	161	10	.44109589
12	12	.03287671	62	3	.16986301	112	22	.30684932	162	*11	.44383562
13	13	.03561644	63	4	.17260274	113	*23	.30958904	163	12	.44657534
14	14	.03835616	64	*5	.17534247	114	24	.31232877	164	13	.44931507
15	*15	.04109589	65	6	.17808219	115	25	.31506849	165	14	.45205479
16	16	.04383562	66	7	.18082192	116	26	.31780822	166	15	.45479452
17	17	.04657534	67	8	.18356164	117	27	.32054795	167	16	.45753425
18	18	.04931507	68	9	.18630137	118	28	.32328767	168	17	.46027397
19	19	.05205479	69	10	.18904110	119	29	.32602740	169	*18	.46301370
20	20	.05479452	70	11	.19178082	120	*30	.32876712	170	19	.46575342
21	21	.05753425	71	*12	.19452055	121	May 1	.33150685	171	20	.46849315
22	*22	.06027397	72	13	.19726027	122	2	.33424658	172	21	.47123288
23	23	.06301370	73	14	.20000000	123	3	.33698630	173	22	.47397260
24	24	.06575342	74	15	.20273973	124	4	.33972603	174	23	.47671233
25	25	.06849315	75	16	.20547945	125	5	.34246575	175	24	.47945205
26	26	.07123288	76	17	.20821918	126	6	.34520548	176	*25	.48219178
27	27	.07397260	77	18	.21095890	127	*7	.34794521	177	26	.48493151
28	28	.07671233	78	*19	.21369863	128	8	.35068493	178	27	.48767123
29	*29	.07945205	79	20	.21643836	129	9	.35342466	179	28	.49041096
30	30	.08219178	80	21	.21917808	130	10	.35616438	180	29	.49315068
31	31	.08493151	81	22	.22191781	131	11	.35890411	181	30	.49589041
32	Feb. 1	.08767123	82	23	.22465753	132	12	.36164384	182	July 1	.49863014
33	2	.09041096	83	24	.22739726	133	13	.36438356	183	*2	.50136986
34	3	.09315068	84	25	.23013699	134	*14	.36712329	184	3	.50410959
35	4	.09589041	85	*26	.23287671	135	15	.36986301	185	4	.50684932
36	*5	.09863014	86	27	.23561644	136	16	.37260274	186	5	.50958904
37	6	.10136986	87	28	.23835616	137	17	.37534247	187	6	.51232877
38	7	.10410959	88	29	.24109589	138	18	.37808219	188	7	.51506849
39	8	.10684932	89	30	.24383562	139	19	.38082192	189	8	.51780822
40	9	.10958904	90	31	.24657534	140	20	.38356164	190	*9	.52054795
41	10	.11232877	91	April 1	.24931507	141	*21	.38630137	191	10	.52328767
42	11	.11506849	92	*2	.25205479	142	22	.38904110	192	11	.52602740
43	*12	.11780822	93	3	.25479452	143	23	.39178082	193	12	.52876712
44	13	.12054795	94	4	.25753425	144	24	.39452055	194	13	.53150685
45	14	.12328767	95	5	.26027397	145	25	.39726027	195	14	.53424658
46	15	.12602740	96	6	.26301370	146	26	.40000000	196	15	.53698630
47	16	.12876712	97	7	.26575342	147	27	.40273973	197	*16	.53972603
48	17	.13150685	98	8	.26849315	148	*28	.40547945	198	17	.54246575
49	18	.13424658	99	*9	.27123288	149	29	.40821918	199	18	.54520548

TABLE XVIII.

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CALENDAR AND DECIMAL PARTS OF A YEAR.

Days.	Cal.	Decimal.	Days.	Cal.	Decimal.	Days.	Cal.	Decimal.	Days.	Cal.	Decimal.
200	July 19	.54794521	250	Sept. 7	.68493151	300	Oct. 27	.82191781	350	Dec. 16	.95890411
201	20	.55068493	251	8	.68767123	301	28	.82465753	351	*17	.96164384
202	21	.55342466	252	9	.69041096	302	*29	.82739726	352	18	.96438356
203	22	.55616438	253	*10	.69315068	303	30	.83013699	353	19	.96712329
204	*23	.55890411	254	11	.69589041	304	31	.83287671	354	20	.96986301
205	24	.56164384	255	12	.69863014	305	Nov. 1	.83561644	355	21	.97260274
206	25	.56438356	256	13	.70136986	306	2	.83835616	356	22	.97534247
207	26	.56712329	257	14	.70410959	307	3	.84109589	357	23	.97808219
208	27	.56986301	258	15	.70684932	308	4	.84383562	358	*24	.98082192
209	28	.57260274	259	16	.70958904	309	*5	.84657534	359	25	.98356164
210	29	.57534247	260	*17	.71232877	310	6	.84931507	360	26	.98630137
211	*30	.57808219	261	18	.71506849	311	7	.85205479	361	27	.98904110
212	31	.58082192	262	19	.71780822	312	8	.85479452	362	28	.99178082
213	Aug. 1	.58356164	263	20	.72054795	313	9	.85753425	363	29	.99452055
214	2	.58630137	264	21	.72328767	314	10	.86027397	364	30	.99726027
215	3	.58904110	265	22	.72602740	315	11	.86301370	365	*31	1.00000000
216	4	.59178082	266	23	.72876712	316	*12	.86575342			
217	5	.59452055	267	*24	.73150685	317	13	.86849315			
218	*6	.59726027	268	25	.73424658	318	14	.87123288			
219	7	.60000000	269	26	.73698630	319	15	.87397260			
220	8	.60273973	270	27	.73972603	320	16	.87671233			
221	9	.60547945	271	28	.74246575	321	17	.87945205			
222	10	.60821918	272	29	.74520548	322	18	.88219178			
223	11	.61095890	273	30	.74794521	323	*19	.88493151			
224	12	.61369863	274	Oct. *1	.75068493	324	20	.88767123			
225	*13	.61643836	275	2	.75342466	325	21	.89041096			
226	14	.61917808	276	3	.75616438	326	22	.89315068			
227	15	.62191781	277	4	.75890411	327	23	.89589041			
228	16	.62465753	278	5	.76164384	328	24	.89863014			
229	17	.62739726	279	6	.76438356	329	25	.90136986			
230	18	.63013699	280	7	.76712329	330	*26	.90410959			
231	19	.63287671	281	*8	.76986301	331	27	.90684932			
232	*20	.63561644	282	9	.77260274	332	28	.90958904			
233	21	.63835616	283	10	.77534247	333	29	.91232877			
234	22	.64109589	284	11	.77808219	334	30	.91506849			
235	23	.64383562	285	12	.78082192	335	Dec. 1	.91780822			
236	24	.64657534	286	13	.78356164	336	2	.92054795			
237	25	.64931507	287	14	.78630137	337	*3	.92328767			
238	26	.65205479	288	*15	.78904110	338	4	.92602740			
239	*27	.65479452	289	16	.79178082	339	5	.92876712			
240	28	.65753425	290	17	.79452055	340	6	.93150685			
241	29	.66027397	291	18	.79726027	341	7	.93424658			
242	30	.66301370	292	19	.80000000	342	8	.93698630			
243	31	.66575342	293	20	.80273973	343	9	.93972603			
244	Sept. 1	.66849315	294	21	.80547945	344	*10	.94246575			
245	2	.67123288	295	*22	.80821918	345	11	.94520548			
246	*3	.67397260	296	23	.81095890	346	12	.94794521			
247	4	.67671233	297	24	.81369863	347	13	.95068493			
248	5	.67945205	298	25	.81643836	348	14	.95342466			
249	6	.68219178	299	26	.81917808	349	15	.95616438			

YEAR AND DAY OF THE WEEK DENOTED BY *.

Year	Day
1881	Saturday,
1882	Sunday,
1883	Monday,
1884	*Tuesday. Wedn.
1885	Thursday,
1886	Friday,
1887	Saturday,
1888	*Sunday. Mond.
1889	Tuesday,
1890	Wednesday,
1891	Thursday,
1892	*Friday. Satur.
1893	Sunday,
1894	Monday,
1895	Tuesday,
1896	*Wedn. Thurs.
1897	Friday,
1898	Saturday,
1899	Sunday,
1900	Monday,
1901	Tuesday,
1902	Wednesday,
1903	Thursday,
1904	*Friday. Satur.
1905	Sunday,
1906	Monday,
1907	Tuesday,
1908	*Wedn. Thurs.
1909	Friday,
1910	Saturday.

* In 1884 and other leap years, the first star day applies only in January and February, and the last applies only in the remaining ten months.

TABLE XIX.

SIMPLE INTEREST FOR DAYS AT 5 PER CENT. 365 DAYS TO THE YEAR.

Days.	0	1	2	3	4	5	6	7	8	9	Days.	0	1	2	3	4	5	6	7	8	9	
0		1	9	17	25	33	41	20	19	49	5	34	4	56	14	11	69	54	47	28	48	
1	2	39	57	46	44	32	43	50	65	15	6	42	61	35	6	53	23	24	45	37	29	REF.
2	10	52	8	38	51	71	62	3	60	12	7	21	13	5	73	74	82	90	98	106	114	
3	18	72	59	30	66	27	36	40	31	70	8	93	92	122	75	112	130	119	117	105	116	
4	26	63	68	22	16	64	7	58	67	55	9	123	138	88	83	125	81	111	124	144	135	

REF.	0	1	2	3	4	5	6	7	8	9	REF.	0	1	2	3	4	5	6	7	8	9
1	0	000	000	000	000	000	000	000	001	001	49	0	001	002	003	004	006	007	008	009	011
2	0	001	002	004	005	006	008	009	010	012	50	0	002	004	006	009	011	013	016	018	020
3	0	003	007	011	014	018	022	025	029	033	51	0	003	006	009	013	016	019	023	026	029
4	0	006	013	020	027	034	041	048	055	062	52	0	002	005	008	011	014	017	020	023	025
5	0	009	019	029	039	049	059	069	078	088	53	0	008	017	026	035	043	052	061	070	078
6	0	008	017	025	034	043	051	060	069	077	54	0	007	015	023	030	038	046	053	061	069
7	0	006	012	018	025	031	037	044	050	056	55	0	006	013	020	026	033	040	046	053	060
8	0	003	006	009	012	015	018	021	024	027	56	0	007	014	021	028	035	042	059	056	064
9	0	000	000	000	001	001	001	001	002	002	57	0	001	003	004	006	008	009	011	013	014
10	0	002	005	008	010	013	016	019	021	024	58	0	006	012	019	025	032	038	045	051	057
11	0	007	014	022	029	036	044	051	059	066	59	0	004	008	013	017	021	026	030	035	039
12	0	003	007	011	015	019	023	027	031	035	60	0	003	007	011	015	019	023	026	030	034
13	0	009	019	029	038	048	058	068	077	087	61	0	008	016	025	033	041	050	058	066	075
14	0	007	014	021	029	036	043	050	058	065	62	0	003	007	010	014	017	021	024	028	032
15	0	002	005	007	010	013	015	018	020	023	63	0	005	011	016	022	028	033	039	044	050
16	0	006	012	018	024	030	036	042	048	054	64	0	006	012	018	024	030	036	043	049	055
17	0	000	000	001	001	002	002	002	003	003	65	0	002	004	007	009	012	014	017	019	022
18	0	004	008	012	016	020	024	028	032	036	66	0	004	009	013	018	023	027	032	037	041
19	0	001	002	003	004	005	006	007	008	009	67	0	006	013	019	026	032	039	046	052	059
20	0	000	001	002	003	004	005	006	007	008	68	0	005	011	017	023	028	034	040	046	051
21	0	009	019	028	038	047	057	067	076	086	69	0	007	015	022	030	037	045	052	060	067
22	0	005	011	017	023	029	035	041	047	053	70	0	005	010	016	021	026	032	037	042	048
23	0	008	017	026	035	044	053	062	071	080	71	0	003	006	010	013	017	020	023	027	030
24	0	009	018	027	036	045	054	063	072	081	72	0	004	008	012	016	021	025	029	033	038
25	0	000	001	001	002	002	003	003	004	004	*73	0	01	02	03	04	05	06	07	08	09
26	0	005	010	016	021	027	032	038	043	049	74	0	010	020	030	040	050	060	070	081	091
27	0	004	009	014	019	023	028	033	038	043	75	0	011	022	034	045	056	068	079	090	102
28	0	007	015	023	031	039	047	055	063	071	76	0	013	027	041	054	068	082	095	109	123
29	0	009	018	028	037	047	056	066	075	085	77	0	016	033	050	067	084	101	118	135	152
30	0	004	009	013	018	022	027	031	036	040	78	0	019	039	059	079	099	119	139	158	178
31	0	005	010	015	020	026	031	036	041	046	79	0	018	037	055	074	093	111	130	149	167
32	0	002	004	006	008	010	012	014	016	018	80	0	016	032	048	065	081	097	114	130	146
33	0	000	001	002	002	003	004	004	005	006	81	0	013	026	039	052	065	078	091	104	117
34	0	006	013	020	027	034	041	047	054	061	82	0	010	020	030	041	051	061	071	082	092
35	0	008	016	025	033	042	050	059	067	076	83	0	012	025	038	050	063	076	089	101	114
36	0	004	009	014	019	024	029	034	039	044	84	0	017	034	052	069	086	104	121	139	156
37	0	009	018	027	037	046	055	065	074	083	85	0	013	027	041	055	069	083	097	111	125
38	0	003	006	009	012	015	018	022	025	028	86	0	019	039	059	078	098	118	138	157	177
39	0	001	003	004	006	007	009	010	012	013	87	0	017	034	051	069	086	103	120	138	155
40	0	005	010	015	020	025	030	035	040	045	88	0	012	025	037	050	063	075	088	100	113
41	0	000	001	002	003	004	004	005	006	007	89	0	016	032	048	064	080	096	112	128	144
42	0	008	016	024	032	041	049	057	065	073	90	0	010	020	031	041	052	062	072	083	093
43	0	002	004	006	008	010	013	015	017	019	91	0	014	028	042	056	070	084	098	112	126
44	0	001	003	005	007	009	011	013	015	017	92	0	011	022	033	044	055	066	077	088	099
45	0	009	018	027	036	045	055	064	073	082	93	0	010	021	032	043	054	065	076	087	098
46	0	001	003	005	007	008	010	012	014	016	94	0	019	039	058	078	097	117	137	156	176
47	0	007	015	023	031	039	046	054	062	070	95	0	015	031	047	063	079	095	111	127	143
48	0	008	016	024	032	040	048	056	064	072	96	0	018	037	056	075	094	113	132	151	170
	0	1	2	3	4	5	6	7	8	9	97	0	019	038	057	076	095	114	133	152	171

* The interest is exact on the lines of 73, 146, 219, 292 and 365.

TABLE XIX. 205

SIMPLE INTEREST FOR DAYS AT 5 PER CENT. 365 DAYS TO THE YEAR.

Days.	0	1	2	3	4	5	6	7	8	9	Days.	0	1	2	3	4	5	6	7	8	9	
10	76	133	85	91	145	132	103	139	100	109	15	171	179	187	166	165	195	148	185	203	192	
11	113	104	143	99	136	141	95	89	137	80	16	190	178	189	196	211	161	156	198	154	184	REF.
12	131	140	128	107	77	129	87	84	142	127	17	197	217	208	149	206	158	164	218	205	176	
13	120	101	121	115	134	108	79	126	96	97	18	212	173	182	186	177	216	172	209	214	168	
14	118	110	102	94	86	78	146	147	155	163	19	162	210	153	204	213	201	180	150	202	160	

REF.	0	1	2	3	4	5	6	7	8	9	REF.	0	1	2	3	4	5	6	7	8	9
98	0	010	021	031	042	052	063	073	084	094	147	0	020	040	060	080	100	120	140	161	181
99	0	015	030	046	061	077	092	108	123	139	148	0	021	042	064	085	106	128	149	170	192
100	0	014	029	044	059	073	088	103	118	133	149	0	023	047	071	094	118	142	165	189	213
101	0	017	035	053	071	089	107	125	143	161	150	0	026	053	080	107	134	161	188	215	242
102	0	019	038	058	077	097	116	136	155	175	151	0	029	059	089	119	149	179	209	238	268
103	0	014	029	043	058	072	087	101	116	130	152	0	028	057	085	114	143	171	200	229	257
104	0	015	030	045	060	076	091	106	121	136	153	0	026	052	078	105	131	157	184	210	236
105	0	012	024	036	048	060	072	084	096	108	154	0	023	046	069	092	115	138	161	184	207
106	0	010	021	032	042	053	064	074	085	096	155	0	020	040	060	081	101	121	141	162	182
107	0	016	033	050	067	084	101	117	134	151	156	0	022	045	068	090	113	136	159	181	204
108	0	018	036	055	073	092	110	129	147	166	157	0	027	054	082	109	136	164	191	219	246
109	0	014	029	044	059	074	089	104	119	134	158	0	023	047	071	095	119	143	167	191	215
110	0	019	038	057	077	096	115	135	154	173	159	0	029	059	089	118	148	178	208	237	267
111	0	013	026	039	052	065	078	092	105	118	160	0	027	054	081	109	136	163	190	218	245
112	0	011	023	034	046	057	069	080	092	103	161	0	022	045	067	090	113	135	158	180	203
113	0	015	030	045	060	075	090	105	120	135	162	0	026	052	078	104	130	156	182	208	234
114	0	010	021	032	043	054	064	075	086	097	163	0	020	040	061	081	102	122	142	163	183
115	0	018	036	054	072	091	109	127	145	163	164	0	024	048	072	096	120	144	168	192	216
116	0	012	024	036	048	060	073	085	097	109	165	0	021	042	063	084	105	126	147	168	189
117	0	011	023	035	047	059	071	083	095	107	166	0	020	041	062	083	104	125	146	167	188
118	0	019	038	057	076	095	115	134	153	172	167	0	029	059	088	118	147	177	207	236	266
119	0	011	023	035	047	058	070	082	094	106	168	0	025	051	077	103	129	155	181	207	233
120	0	017	035	053	071	089	106	124	142	160	169	0	028	057	086	115	144	173	202	231	260
121	0	018	036	054	072	090	108	126	144	162	170	0	029	058	087	116	145	174	203	232	261
122	0	011	022	033	044	056	067	078	089	101	171	0	020	041	061	082	102	123	143	164	184
123	0	012	024	036	049	061	073	086	098	110	172	0	025	050	076	101	127	152	178	203	229
124	0	013	026	039	053	066	079	093	106	119	173	0	024	049	074	099	123	148	173	198	223
125	0	012	025	038	051	064	077	090	103	115	174	0	027	055	083	111	139	167	195	223	251
126	0	018	037	056	075	093	112	131	150	168	175	0	029	058	088	117	147	176	206	235	265
127	0	017	035	053	070	088	106	123	141	159	176	0	024	049	073	098	122	147	171	196	220
128	0	016	033	050	066	083	100	116	133	150	177	0	025	050	075	100	126	151	176	201	226
129	0	017	034	051	068	085	102	129	136	154	178	0	022	044	066	088	110	132	154	176	198
130	0	011	023	034	046	058	069	081	093	104	179	0	020	041	062	082	103	124	144	165	186
131	0	016	032	049	065	082	098	115	131	147	180	0	026	053	080	107	134	161	187	214	241
132	0	014	028	043	057	071	086	100	115	129	181	0	028	056	085	113	142	170	199	227	256
133	0	013	027	041	055	069	083	096	110	124	182	0	024	049	074	099	124	149	174	199	224
134	0	018	036	055	073	091	110	128	146	165	183	0	029	058	087	117	146	175	205	234	263
135	0	013	027	040	054	067	081	094	108	122	184	0	023	046	069	092	115	138	162	185	208
136	0	015	031	046	062	078	093	109	124	140	185	0	021	043	064	086	107	129	150	172	193
137	0	016	032	048	064	080	096	113	129	145	186	0	025	050	075	100	125	150	175	200	225
138	0	012	024	037	049	062	074	087	099	112	187	0	020	041	062	083	104	124	145	166	187
139	0	014	029	043	058	073	087	102	117	131	188	0	028	056	084	112	141	169	197	225	253
140	0	016	033	049	066	082	099	116	132	149	189	0	022	044	066	088	110	133	155	177	199
141	0	015	031	047	063	078	094	110	126	141	190	0	021	043	065	087	109	131	153	175	197
142	0	017	035	052	070	087	105	122	140	157	191	0	029	058	087	116	145	175	204	233	262
143	0	015	030	046	061	076	092	107	122	138	192	0	021	043	065	087	108	130	152	174	196
144	0	013	026	040	053	067	080	093	107	120	193	0	027	055	083	111	139	166	194	222	250
145	0	014	028	042	056	071	085	099	113	128	194	0	028	056	084	112	140	168	196	224	252
*146	0	02	04	06	08	10	12	14	16	18		0	1	2	3	4	5	6	7	8	9

TABLE XIX.

SIMPLE INTEREST FOR DAYS AT 5 PER CENT. 365 DAYS TO THE YEAR.

Days.	0	1	2	3	4	5	6	7	8	9	Days.	0	1	2	3	4	5	6	7	8	9
20	157	215	200	193	174	194	188	207	181	152	25	291	278	249	285	246	255	259	250	289	245
21	199	169	170	191	183	175	167	159	151	219	26	282	287	241	235	283	226	277	286	274	253
22	220	228	236	244	252	260	239	238	268	221	27	223	275	233	230	288	273	266	247	267	261
23	258	276	265	263	251	262	269	284	234	229	28	280	254	225	272	242	243	264	256	248	240
24	271	227	257	270	290	281	222	279	231	237	29	232	224	292	293	361	309	317	325	333	312

REF.	0	1	2	3	4	5	6	7	8	9	REF.	0	1	2	3	4	5	6	7	8	9
195	0	021	042	063	084	106	127	148	169	191	244	0	030	061	091	122	152	183	213	244	274
196	0	022	044	066	089	111	133	156	178	200	245	0	035	070	106	141	177	212	248	283	319
197	0	023	046	069	093	116	139	163	186	209	246	0	034	069	104	139	173	208	243	278	313
198	0	022	045	068	091	114	137	160	183	205	247	0	037	075	113	151	189	227	265	303	341
199	0	028	057	086	115	143	172	201	230	258	248	0	039	078	118	157	197	236	276	315	355
200	0	027	055	083	110	138	166	193	221	249	249	0	034	069	103	138	172	207	241	276	310
201	0	026	053	080	106	133	160	186	213	240	250	0	035	070	105	140	176	211	246	281	316
202	0	027	054	081	108	135	162	199	216	244	251	0	032	064	096	128	160	192	224	256	288
203	0	021	043	064	086	108	129	151	173	194	252	0	030	061	092	122	153	184	214	245	276
204	0	026	052	079	105	132	158	185	211	237	253	0	036	073	110	147	184	221	257	294	331
205	0	024	048	073	097	121	146	170	195	219	254	0	038	076	115	153	192	230	269	307	346
206	0	023	047	071	095	119	143	166	190	214	255	0	034	069	104	139	174	209	244	279	314
207	0	028	056	085	113	141	170	198	226	255	256	0	039	078	117	157	196	235	275	314	353
208	0	023	047	070	094	117	141	164	188	212	257	0	033	066	099	132	165	198	232	265	298
209	0	025	051	076	102	128	153	179	204	230	258	0	031	063	094	126	157	189	220	252	283
210	0	026	052	078	104	130	156	183	209	235	259	0	035	070	105	140	175	210	245	280	315
211	0	022	044	067	089	112	134	157	179	202	260	0	030	061	092	123	154	184	215	246	277
212	0	024	049	073	098	123	147	172	197	221	261	0	038	076	114	152	191	229	267	305	343
213	0	026	053	079	106	132	159	186	212	239	262	0	032	064	096	128	160	193	225	257	289
214	0	025	051	077	103	128	154	180	206	231	263	0	031	063	095	127	159	191	223	255	287
215	0	027	055	082	110	137	165	192	220	247	264	0	039	078	117	156	195	235	274	313	352
216	0	025	050	076	101	126	152	177	202	228	265	0	031	063	095	127	158	190	222	254	286
217	0	023	046	070	093	117	140	163	187	210	266	0	037	075	113	151	189	226	264	302	340
218	0	024	048	072	096	121	145	169	193	218	267	0	038	076	114	152	190	228	266	304	342
*219	0	03	06	09	12	15	18	21	24	27	268	0	031	062	093	124	156	187	218	249	281
220	0	030	060	090	120	150	180	210	241	271	269	0	032	064	096	129	161	193	226	258	290
221	0	031	062	094	125	156	188	219	250	282	270	0	033	066	099	133	166	199	233	266	299
222	0	033	067	101	134	168	202	235	269	303	271	0	032	065	098	131	164	197	230	263	295
223	0	036	073	110	147	184	221	258	295	332	272	0	038	077	116	155	193	232	271	310	348
224	0	039	079	119	159	199	239	279	318	358	273	0	037	075	113	150	188	226	263	301	339
225	0	038	077	115	154	193	231	270	309	347	274	0	036	073	110	146	183	220	256	293	330
226	0	036	072	108	145	181	217	254	290	326	275	0	037	074	111	148	185	222	269	296	334
227	0	033	066	099	132	165	198	231	264	297	276	0	031	063	094	126	158	189	221	253	284
228	0	030	060	090	121	151	181	211	242	272	277	0	036	072	109	145	182	218	255	291	327
229	0	032	065	098	130	163	196	229	261	294	278	0	034	068	103	137	171	206	240	275	309
230	0	037	074	112	149	186	224	261	299	336	279	0	033	067	101	135	169	203	236	270	304
231	0	033	067	101	135	169	203	237	271	305	280	0	038	076	115	153	191	230	268	306	345
232	0	039	079	119	158	198	238	278	317	357	281	0	033	067	100	134	167	201	234	268	302
233	0	037	074	111	149	186	223	260	298	335	282	0	035	071	106	142	178	213	249	284	320
234	0	032	065	097	130	163	195	228	260	293	283	0	036	072	108	144	180	216	253	289	325
235	0	036	072	108	144	180	216	252	288	324	284	0	032	064	097	129	162	194	227	259	292
236	0	030	060	091	121	152	182	212	243	273	285	0	034	069	103	138	173	207	242	277	311
237	0	034	068	102	136	170	204	238	272	306	286	0	036	073	109	146	182	219	256	292	329
238	0	031	062	093	124	155	186	217	248	279	287	0	035	071	107	143	178	214	250	286	321
239	0	030	061	092	123	154	185	216	247	278	288	0	037	075	112	150	187	225	262	300	337
240	0	039	079	118	158	197	237	277	316	356	289	0	035	070	106	141	176	212	247	282	318
241	0	035	071	107	143	179	215	251	287	323	290	0	033	066	100	133	167	200	233	267	300
242	0	038	077	116	155	194	233	272	311	350	291	0	034	068	102	136	171	205	239	273	308
243	0	039	078	117	156	195	234	273	312	351	*292	0,04	08	12	16	20	24	28	32	36	

TABLE XIX.
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SIMPLE INTEREST FOR DAYS AT 5 PER CENT. 365 DAYS TO THE YEAR.

Days.	0	1	2	3	4	5	6	7	8	9	Days.	0	1	2	3	4	5	6	7	8	9	
30	311	341	294	331	349	338	336	324	335	342	35	320	340	334	353	327	298	345	315	316	337	
31	357	307	302	344	300	330	343	363	354	295	36	329	321	313	305	297	365					REF.
32	352	304	310	364	351	322	358	319	328	332												
33	323	362	318	355	360	314	308	356	299	350												
34	359	347	326	296	348	306	303	361	346	339												

REF.	0	1	2	3	4	5	6	7	8	9	REF.	0	1	2	3	4	5	6	7	8	9
293	0	040	080	120	160	200	240	280	321	361	341	0	041	082	123	164	206	247	288	329	371
294	0	041	082	124	165	206	248	289	330	372	342	0	042	084	126	169	211	253	296	338	380
295	0	043	087	131	174	218	262	305	349	393	343	0	043	086	129	173	216	259	303	346	389
296	0	046	093	140	187	234	281	328	375	422	344	0	042	085	128	171	214	257	300	343	385
297	0	049	099	149	199	249	299	349	398	448	345	0	048	097	146	195	243	292	341	390	438
298	0	048	097	145	194	243	291	340	389	437	346	0	047	095	143	190	238	286	333	381	429
299	0	046	092	138	185	231	277	324	370	416	347	0	046	093	140	186	233	280	326	373	420
300	0	043	086	129	172	215	258	301	344	387	348	0	047	094	141	188	235	282	339	376	424
301	0	040	080	120	161	201	241	281	322	362	349	0	041	083	124	166	208	249	291	333	374
302	0	042	085	128	170	213	256	299	341	384	350	0	046	092	139	185	232	278	325	371	417
303	0	047	094	142	189	236	284	331	379	426	351	0	044	088	133	177	221	266	310	355	399
304	0	043	087	131	175	219	263	307	351	395	352	0	043	087	131	175	219	263	306	350	394
305	0	049	099	149	198	248	298	348	397	447	353	0	048	096	145	193	241	290	338	386	435
306	0	047	094	141	189	236	283	330	378	425	354	0	043	087	130	174	217	261	304	348	392
307	0	042	085	127	170	213	255	298	340	383	355	0	045	091	136	182	228	273	319	364	410
308	0	046	092	138	184	230	276	322	368	414	356	0	046	092	138	184	230	276	323	369	415
309	0	040	080	121	161	202	242	282	323	363	357	0	042	084	127	169	212	254	297	339	382
310	0	044	088	132	176	220	264	308	352	396	358	0	044	089	133	178	223	267	312	357	401
311	0	041	082	123	164	205	246	287	328	369	359	0	046	093	139	186	232	279	326	372	419
312	0	040	081	122	163	204	245	286	327	368	360	0	045	091	137	183	228	274	320	366	411
313	0	049	099	148	198	247	297	347	396	446	361	0	047	095	142	190	237	285	332	380	427
314	0	045	091	137	183	229	275	321	367	413	362	0	045	090	136	181	226	272	317	362	408
315	0	048	097	146	195	244	293	342	391	440	363	0	043	086	130	173	217	260	303	347	390
316	0	049	098	147	196	245	294	343	392	441	364	0	044	088	132	176	221	265	309	353	398
317	0	040	081	121	162	202	243	283	324	364	*365	0	05	10	15	20	25	30	35	40	45
318	0	045	090	136	181	227	272	318	363	409		0	1	2	3	4	5	6	7	8	9
319	0	044	089	134	179	223	268	313	358	403											
320	0	047	095	143	191	239	287	335	383	431											
321	0	049	098	148	197	247	296	346	395	445											
322	0	044	089	133	178	222	267	311	356	400											
323	0	045	090	135	180	226	271	316	361	406											
324	0	042	084	126	168	210	252	294	336	378											
325	0	040	081	122	162	203	244	284	325	366											
326	0	046	093	140	187	234	281	327	374	421											
327	0	048	096	145	193	242	290	339	387	436											
328	0	044	089	134	179	224	269	314	359	404											
329	0	049	098	147	197	246	295	345	394	443											
330	0	043	086	129	172	215	258	302	345	388											
331	0	041	083	124	166	207	249	290	332	373											
332	0	045	090	135	180	225	270	315	360	405											
333	0	040	081	122	163	204	244	285	326	367											
334	0	048	096	144	192	241	289	337	385	433											
335	0	042	084	126	168	210	253	295	337	379											
336	0	041	083	125	167	209	251	293	335	377											
337	0	049	098	147	196	245	295	344	393	442											
338	0	041	083	125	167	208	250	292	334	376											
339	0	047	095	143	191	239	286	334	382	430											
340	0	048	096	144	192	240	288	336	384	432											
	0	1	2	3	4	5	6	7	8	9											

EXAMPLE. Required the interest on $475,289.37 for 317 days at 5 per cent.

In the upper part of the Table, 317 days give at the junction, 363 as *Reference*. And this 363 guides to the line 363 (near the end of the Table in this instance) giving the multiples of interest for " contracted multiplication."

On this line of *Ref.* the interest on $5 is $.217 nearly, or $ 21712328767123 more nearly, which figures (after the first three) the final figures in that column of eight spaces, commencing at 7 and reading down to the drawn line below, then recommencing at the line drawn above ; and so generally.

	Ref.
$475,289.37	(363)
17,369.863	4
3,039.726	7
217.123	5
08.684	2
3.473	8
.390	9
13	3
3	7

The decimal points of principal and interest are made to agree, by commencing each tabular product one place to the right of its figure in the multiplicand.

Interest 317 days at 5 per cent. $20,639.275

NOTE. For 4 per cent. subtract ⅕; for 6 per cent. add ⅕; for 4½ per cent. subtract ¹⁄₁₀; etc., from the tabular result.

In all cases, to change from the basis of 365 to that of 360 days to the year, add ¹⁄₇₂ part to the interest,

TABLE XX.

THE AMOUNT OF $1 AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
1	1.02000000	1.02500000	1.03000000	1.03500000	1.04000000	1.04500000	1
2	1.04040000	1.05062500	1.06090000	1.07122500	1.08160000	1.09202500	2
3	1.06120800	1.07689063	1.09272700	1.10871787	1.12486400	1.14116613	3
4	1.08243216	1.10381289	1.12550881	1.14752300	1.16985856	1.19251860	4
5	1.10408080	1.13140821	1.15927407	1.18768631	1.21665290	1.24618194	5
6	1.12616242	1.15969342	1.19405230	1.22925533	1.26531902	1.30226012	6
7	1.14868567	1.18868575	1.22987387	1.27227926	1.31593178	1.36086183	7
8	1.17165938	1.21840290	1.26677008	1.31680904	1.36856905	1.42210061	8
9	1.19509257	1.24886297	1.30477318	1.36289735	1.42331181	1.48609514	9
10	1.21899442	1.28008454	1.34391638	1.41059876	1.48024428	1.55296942	10
11	1.24337431	1.31208666	1.38423387	1.45996972	1.53945406	1.62285305	11
12	1.26824179	1.34488882	1.42576089	1.51106866	1.60103222	1.69588143	12
13	1.29360663	1.37851104	1.46853371	1.56395606	1.66507351	1.77219610	13
14	1.31947876	1.41297382	1.51258972	1.61869452	1.73167645	1.85194492	14
15	1.34586834	1.44829817	1.55796742	1.67534883	1.80094351	1.93528244	15
16	1.37278571	1.48450562	1.60470644	1.73398604	1.87298125	2.02237015	16
17	1.40024142	1.52161826	1.65284763	1.79467555	1.94790050	2.11337681	17
18	1.42824625	1.55965872	1.70243306	1.85748920	2.02581652	2.20847877	18
19	1.45681117	1.59865019	1.75350605	1.92250132	2.10684918	2.30786031	19
20	1.48594740	1.63861644	1.80611123	1.98978886	2.19112314	2.41171402	20
21	1.51566634	1.67958185	1.86029457	2.05943147	2.27876807	2.52024116	21
22	1.54597967	1.72157140	1.91610341	2.13151158	2.36991879	2.63365201	22
23	1.57689926	1.76461068	1.97358651	2.20611448	2.46471554	2.75216635	23
24	1.60843725	1.80872595	2.03279411	2.28332849	2.56330416	2.87601383	24
25	1.64060599	1.85394410	2.09377793	2.36324498	2.66583633	3.00543446	25
26	1.67341811	1.90029270	2.15659127	2.44595856	2.77246978	3.14067901	26
27	1.70688648	1.94780002	2.22128901	2.53156711	2.88336858	3.28200956	27
28	1.74102421	1.99649502	2.28792768	2.62017196	2.99870332	3.42969999	28
29	1.77584469	2.04640739	2.35656551	2.71187798	3.11865145	3.58403649	29
30	1.81136158	2.09756758	2.42726247	2.80679370	3.24339751	3.74531813	30
31	1.84758882	2.15000677	2.50008035	2.90503148	3.37313341	3.91385745	31
32	1.88454059	2.20375694	2.57508276	3.00670759	3.50805875	4.08998104	32
33	1.92223140	2.25885086	2.65233524	3.11194235	3.64838110	4.27403018	33
34	1.96067603	2.31532213	2.73190530	3.22086033	3.79431634	4.46636154	34
35	1.99988955	2.37320519	2.81386245	3.33359045	3.94608899	4.66734781	35
36	2.03988734	2.43253532	2.89827833	3.45026611	4.10393255	4.87737846	36
37	2.08068509	2.49334870	2.98522668	3.57102542	4.26808986	5.09686049	37
38	2.12229879	2.55568242	3.07478348	3.69601131	4.43881345	5.32621921	38
39	2.16474477	2.61957448	3.16702698	3.82537171	4.61636599	5.56589908	39
40	2.20803966	2.68506384	3.26203779	3.95925972	4.80102063	5.81636454	40
41	2.25220046	2.75219043	3.35989893	4.09783381	4.99306145	6.07810094	41
42	2.29724447	2.82099520	3.46069589	4.24125799	5.19278391	6.35161548	42
43	2.34318936	2.89152008	3.56451677	4.38970202	5.40049527	6.63743818	43
44	2.39005314	2.96380808	3.67145227	4.54334160	5.61651508	6.93612290	44
45	2.43785421	3.03790328	3.78159584	4.70235855	5.84117568	7.24824843	45
46	2.48661129	3.11385086	3.89504372	4.86694110	6.07482271	7.57441961	46
47	2.53634352	3.19169713	4.01189503	5.03728404	6.31781562	7.91526849	47
48	2.58707039	3.27148956	4.13225188	5.21358898	6.57052824	8.27145557	48
49	2.63881179	3.35327680	4.25621944	5.39606459	6.83334937	8.64367107	49
50	2.69158803	3.43710872	4.38390602	5.58492686	7.10668335	9.03263627	50

FORMULA, Amount $= (1+i)^n$.

TABLE XX. 209

THE AMOUNT OF $1 AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
1	1.05000000	1.06000000	1.07000000	1.08000000	1.09000000	1.10000000	1
2	1.10250000	1.12360000	1.14490000	1.16640000	1.18810000	1.21000000	2
3	1.15762500	1.19101600	1.22504300	1.25971200	1.29502900	1.33100000	3
4	1.21550625	1.26247696	1.31079601	1.36048896	1.41158161	1.46410000	4
5	1.27628156	1.33822558	1.40255173	1.46932808	1.53862395	1.61051000	5
6	1.34009564	1.41851911	1.50073035	1.58687432	1.67710011	1.77156100	6
7	1.40710042	1.50363026	1.60578148	1.71382427	1.82803912	1.94871710	7
8	1.47745544	1.59384807	1.71818618	1.85093021	1.99256264	2.14358881	8
9	1.55132822	1.68947896	1.83845921	1.99900463	2.17189328	2.35794769	9
10	1.62889463	1.79084770	1.96715136	2.15892500	2.36736367	2.59374246	10
11	1.71033936	1.89829856	2.10485195	2.33163900	2.58042641	2.85311671	11
12	1.79585633	2.01219647	2.25219159	2.51817012	2.81266478	3.13842838	12
13	1.88564914	2.13292826	2.40984500	2.71962373	3.06580461	3.45227121	13
14	1.97993160	2.26090396	2.57853415	2.93719362	3.34172703	3.79749834	14
15	2.07892818	2.39655819	2.75903154	3.17216911	3.64248246	4.17724817	15
16	2.18287459	2.54035168	2.95216375	3.42594264	3.97030588	4.59497299	16
17	2.29201832	2.69277279	3.15881521	3.70001805	4.32763341	5.05447028	17
18	2.40661923	2.85433915	3.37993228	3.99601950	4.71712042	5.55991731	18
19	2.52695020	3.02559950	3.61652753	4.31570106	5.14166125	6.11590904	19
20	2.65329771	3.20713547	3.86968446	4.66095714	5.60441077	6.72749995	20
21	2.78596259	3.39956360	4.14056237	5.03383372	6.10880774	7.40024994	21
22	2.92526072	3.60353742	4.43040174	5.43654041	6.65860043	8.14027494	22
23	3.07152376	3.81974966	4.74052986	5.87146365	7.25787447	8.95430243	23
24	3.22509994	4.04893464	5.07236695	6.34118074	7.91108317	9.84973268	24
25	3.38635494	4.29187072	5.42743264	6.84847520	8.62308066	10.83470594	25
26	3.55567269	4.54938296	5.80735292	7.39635321	9.39915792	11.91817654	26
27	3.73345632	4.82234594	6.21386763	7.98806147	10.24508213	13.10999419	27
28	3.92012914	5.11168670	6.64883836	8.62710639	11.16713952	14.42099361	28
29	4.11613560	5.41838790	7.11425705	9.31727490	12.17218208	15.86309297	29
30	4.32194238	5.74349117	7.61225504	10.06265689	13.26767847	17.44940227	30
31	4.53803949	6.08810064	8.14511290	10.86766944	14.46176953	19.19434250	31
32	4.76494147	6.45338668	8.71527080	11.73708300	15.76332879	21.11377675	32
33	5.00318854	6.84058988	9.32533975	12.67604963	17.18202838	23.22515442	33
34	5.25334797	7.25102528	9.97811354	13.69013361	18.72841093	25.54766986	34
35	5.51601537	7.68608679	10.67658148	14.78534429	20.41396792	28.10243685	35
36	5.79181614	8.14725290	11.42394219	15.96817184	22.25122503	30.91268053	36
37	6.08140694	8.63608712	12.22361814	17.24562558	24.25383528	34.00394859	37
38	6.38547729	9.15425235	13.07927141	18.62527563	26.43668046	37.40434344	38
39	6.70475115	9.70350749	13.99482041	20.11529768	28.81598170	41.14477779	39
40	7.03998871	10.28571794	14.97445784	21.72452150	31.40942005	45.25925557	40
41	7.39198815	10.90286101	16.02266989	23.46248322	34.23626786	49.78518112	41
42	7.76158756	11.55703267	17.14425678	25.33948187	37.31753197	54.76369924	42
43	8.14966693	12.25045463	18.34435475	27.36664042	40.67610984	60.24006916	43
44	8.55715028	12.98548191	19.62845959	29.55597166	44.33695973	66.26407608	44
45	8.98500779	13.76461083	21.00245176	31.92044939	48.32728610	72.89048369	45
46	9.43425818	14.59048748	22.47262338	34.47408534	52.67674185	80.17953205	46
47	9.90597109	15.46591673	24.04570702	37.23201217	57.41764862	88.19748526	47
48	10.40126965	16.39387173	25.72890651	40.21057314	62.58523700	97.01723378	48
49	10.92133313	17.37750403	27.52992997	43.42741899	68.21790833	106.71895716	49
50	11.46739979	18.42015427	29.45702506	46.90161251	74.35752008	117.39085288	50

TABLE XX.

THE AMOUNT OF $1 AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
51	2.74541979	3.52303644	4.51542320	5.78039930	7.39095068	9.43910490	51
52	2.80032819	3.61111235	4.65088590	5.98271327	7.68658871	9.86386463	52
53	2.85633475	3.70139016	4.79041247	6.19210823	7.99405226	10.30773853	53
54	2.91346144	3.79392491	4.93412485	6.40883202	8.31381435	10.77158677	54
55	2.97173067	3.88877303	5.08214859	6.63314114	8.64636692	11.25630817	55
56	3.03116529	3.98599236	5.23461305	6.86530108	8.99222160	11.76284204	56
57	3.09178859	4.08564217	5.39165144	7.10558662	9.35191046	12.29216993	57
58	3.15362436	4.18778322	5.55340098	7.35428215	9.72598688	12.84531758	58
59	3.21669685	4.29247780	5.72000301	7.61168203	10.11502635	13.42335687	59
60	3.28103079	4.39978975	5.89160310	7.87809090	10.51962741	14.02740793	60
61	3.34665140	4.50978449	6.06835120	8.15382408	10.94041250	14.65864129	61
62	3.41358443	4.62252910	6.25040173	8.43920792	11.37802900	15.31828014	62
63	3.48185612	4.73809233	6.43791378	8.73458020	11.83315016	16.00760275	63
64	3.55149324	4.85654464	6.63105120	9.04029051	12.30647617	16.72794487	64
65	3.62252311	4.97795826	6.82998273	9.35670068	12.79873522	17.48070239	65
66	3.69497357	5.10240721	7.03488222	9.68418520	13.31068463	18.26733400	66
67	3.76887304	5.22996739	7.24592868	10.02313168	13.84311201	19.08936403	67
68	3.84425050	5.36071658	7.46330654	10.37394129	14.39683649	19.94838541	68
69	3.92113551	5.49473449	7.68720574	10.73702924	14.97270995	20.84606276	69
70	3.99955822	5.63210286	7.91782191	11.11282526	15.57161835	21.78413558	70
71	4.07954939	5.77290543	8.15535657	11.50177414	16.19448308	22.76442168	71
72	4.16114038	5.91722806	8.40001727	11.90433624	16.84226241	23.78882066	72
73	4.24436318	6.06515876	8.65201778	12.32098801	17.51595290	24.85931759	73
74	4.32925045	6.21678773	8.91157832	12.75222259	18.21659102	25.97798688	74
75	4.41583546	6.37220743	9.17892567	13.19855038	18.94525466	27.14699629	75
76	4.50415216	6.53151261	9.45429344	13.66049964	19.70306485	28.36861112	76
77	4.59423521	6.69480043	9.73792224	14.13861713	20.49118744	29.64519862	77
78	4.68611991	6.86217044	10.03005991	14.63346873	21.31083494	30.97923256	78
79	4.77984231	7.03372470	10.33096170	15.14564013	22.16326833	32.37329802	79
80	4.87543916	7.20956782	10.64089056	15.67573754	23.04979907	33.83009643	80
81	4.97294794	7.38980701	10.96011727	16.22438835	23.97179103	35.35245077	81
82	5.07240690	7.57455219	11.28892079	16.79224194	24.93066267	36.94331106	82
83	5.17385504	7.76391599	11.62758841	17.37997041	25.92788918	38.60576006	83
84	5.27733214	7.95801389	11.97641607	17.98826938	26.96500475	40.34301926	84
85	5.38287878	8.15696424	12.33570855	18.61785880	28.04360494	42.15845513	85
86	5.49053636	8.36088834	12.70577981	19.26948386	29.16534913	44.05558561	86
87	5.60034708	8.56991055	13.08695320	19.94391580	30.33196310	46.03808696	87
88	5.71235402	8.78415832	13.47956180	20.64195285	31.54524162	48.10980087	88
89	5.82660110	9.00376228	13.88394865	21.36442120	32.80705129	50.27474191	89
90	5.94313313	9.22885633	14.30046711	22.11217594	34.11933334	52.53710530	90
91	6.06199579	9.45957774	14.72948112	22.88610210	35.48410667	54.90127503	91
92	6.18323570	9.69606718	15.17136556	23.68711567	36.90347094	57.37183241	92
93	6.30690042	9.93846886	15.62650652	24.51616472	38.37960978	59.95356487	93
94	6.43303843	10.18693058	16.09530172	25.37423049	39.91479417	62.65147529	94
95	6.56169920	10.44160385	16.57816077	26.26232856	41.51138594	65.47079168	95
96	6.69293318	10.70264395	17.07550559	27.18151005	43.17184137	68.41697730	96
97	6.82679184	10.97021004	17.58777076	28.13286291	44.89871503	71.49574128	97
98	6.96332768	11.24446530	18.11540388	29.11751311	46.69466363	74.71304964	98
99	7.10259423	11.52557693	18.65886600	30.13662607	48.56245017	78.07513687	99
100	7.24464612	11.81371635	19.21863198	31.19140798	50.50494818	81.58851803	100

TABLE XX.

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THE AMOUNT OF $1 AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	10 Per Cent.	Years.
51	12.04076978	19.52536353	31.51901682	50.65374151	129.12993817	51
52	12.64280826	20.69688534	33.72534799	54.70604083	142.04293198	52
53	13.27494868	21.93869846	36.08612235	59.08252410	156.24722518	53
54	13.93869611	23.25502037	38.61215092	63.80912603	171.87194770	54
55	14.63563092	24.65032159	41.31500148	68.91385611	189.05914247	55
56	15.36741246	26.12934089	44.20705159	74.42696460	207.96505672	56
57	16.13578309	27.69710134	47.30154520	80.38112177	228.76156239	57
58	16.94257224	29.35892742	50.61265336	86.81161151	251.63771863	58
59	17.78970085	31.12046307	54.15553910	93.75654043	276.80149049	59
60	18.67918589	32.98769085	57.94642683	101.25706367	304.48163954	60
61	19.61314519	34.96695230	62.00267671	109.35762876	334.92980350	61
62	20.59380245	37.06496944	66.34286408	118.10623906	368.42278385	62
63	21.62349257	39.28886761	70.98686457	127.55473819	405.26506223	63
64	22.70466720	41.64619966	75.95594509	137.75911724	445.79156845	64
65	23.83990056	44.14497164	81.27286124	148.77984662	490.37072530	65
66	25.03189559	46.79366994	86.96196153	160.68223435	539.40779783	66
67	26.28349037	49.60129014	93.04929884	173.53681310	593.34857761	67
68	27.59766488	52.57736755	99.56274976	187.41975814	652.68343537	68
69	28.97754813	55.73200960	106.53214224	202.41333880	717.95177891	69
70	30.42642554	59.07593018	113.98939220	218.60640590	789.74695680	70
71	31.94774681	62.62048599	121.96864965	236.09491837	868.72165248	71
72	33.54513415	66.37771515	130.50645513	254.98251184	955.59381773	72
73	35.22239086	70.36037806	139.64190699	275.38111279	1,051.15319950	73
74	36.98351040	74.58200074	149.41684047	297.41160181	1,156.26851945	74
75	38.83268592	79.05692078	159.87601931	321.20452996	1,271.89537140	75
76	40.77432022	83.80033603	171.06734066	346.90089235	1,399.08490853	76
77	42.81303623	88.82835619	183.04205450	374.65296374	1,538.99339939	77
78	44.95368804	94.15805756	195.85499832	404.62520084	1,692.89273933	78
79	47.20137244	99.80754102	209.56484820	436.99521691	1,862.18201326	79
80	49.56144107	105.79599348	224.23438758	471.95483426	2,048.40021459	80
81	52.03951312	112.14375309	239.93079471	509.71122100	2,253.24023604	81
82	54.64148878	118.87237827	256.72595034	550.48811868	2,478.56425965	82
83	57.37356322	126.00472097	274.69676686	594.52716818	2,726.42068561	83
84	60.24224138	133.56500423	293.92554054	642.08934163	2,999.06275418	84
85	63.25435344	141.57890448	314.50032838	693.45648896	3,298.96902959	85
86	66.41707112	150.07363875	336.51535136	748.93300808	3,628.86593255	86
87	69.73792467	159.07805708	360.07142596	808.84764873	3,991.75252581	87
88	73.22482091	168.62274050	385.27642578	873.55546062	4,390.92777839	88
89	76.88606195	178.74010493	412.24577558	943.43989747	4,830.02055623	89
90	80.73036505	189.46451123	441.10297987	1,018.91508927	5,313.02261185	90
91	84.76688330	200.83238190	471.98018846	1,100.42829641	5,844.32487303	91
92	89.00522747	212.88232481	505.01880166	1,188.46256013	6,428.75736034	92
93	93.45548884	225.65526430	540.37011777	1,283.53956494	7,071.63309637	93
94	98.12826328	239.19458016	578.19602602	1,386.22273013	7,778.79640601	94
95	103.03467645	253.54625497	618.66974784	1,497.12054854	8,556.67604661	95
96	108.18641027	268.75903027	661.97663019	1,616.89019242	9,412.34365127	96
97	113.59573078	284.88457208	708.31499430	1,746.24140782	10,353.57801640	97
98	119.27551732	301.97764641	757.89704390	1,885.94072044	11,388.93581804	98
99	125.23929319	320.09630519	810.94983697	2,036.81597808	12,527.82939984	99
100	131.50125785	339.30208351	867.71632556	2,199.76125632	13,780.61233982	100

THE PRESENT VALUE OF $1 DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
1	.98039216	.97560976	.97087379	.96618357	.96153846	.95693780	1
2	.96116878	.95181440	.94259591	.93351070	.92455621	.91572995	2
3	.94232233	.92859941	.91514166	.90194270	.88899636	.87629660	3
4	.92384543	.90595064	.88848705	.87144223	.85480419	.83856134	4
5	.90573081	.88385429	.86260878	.84197317	.82192711	.80245105	5
6	.88797138	.86229687	.83748426	.81350064	.79031453	.76789574	6
7	.87056018	.84126524	.81309151	.78599096	.75991781	.73482846	7
8	.85349037	.82074657	.78940923	.75941155	.73069020	.70318513	8
9	.83675527	.80072836	.76641673	.73373097	.70258674	.67290443	9
10	.82034830	.78119840	.74409391	.70891881	.67556417	.64392768	10
11	.80426304	.76214478	.72242127	.68494571	.64958093	.61619874	11
12	.78849318	.74355589	.70137988	.66178330	.62459705	.58966386	12
13	.77303253	.72542038	.68095134	.63940415	.60057409	.56427164	13
14	.75787502	.70772720	.66111781	.61778179	.57747508	.53997286	14
15	.74301473	.69046556	.64186195	.59689062	.55526450	.51672044	15
16	.72844581	.67362493	.62316694	.57670591	.53390818	.49446932	16
17	.71416256	.65719506	.60501645	.55720378	.51337325	.47317639	17
18	.70015937	.64116591	.58739461	.53836114	.49362812	.45280037	18
19	.68643076	.62552772	.57028603	.52015569	.47464242	.43330179	19
20	.67297133	.61027094	.55367576	.50256588	.45638695	.41464286	20
21	.65977582	.59538629	.53754928	.48557090	.43883360	.39678743	21
22	.64683904	.58086467	.52189250	.46915063	.42195539	.37970089	22
23	.63415592	.56669724	.50669175	.45328563	.40572633	.36335013	23
24	.62172149	.55287535	.49193374	.43795713	.39012147	.34770347	24
25	.60953087	.53939059	.47760557	.42314699	.37511680	.33273060	25
26	.59757928	.52623472	.46369473	.40883767	.36068923	.31840248	26
27	.58586204	.51339973	.45018906	.39501224	.34681657	.30469137	27
28	.57437455	.50087778	.43707675	.38165434	.33347747	.29157069	28
29	.56311231	.48866125	.42434636	.36874816	.32065141	.27901502	29
30	.55207089	.47674269	.41198676	.35627841	.30831867	.26700002	30
31	.54124597	.46511481	.39998715	.34423035	.29646026	.25550241	31
32	.53063330	.45377055	.38833703	.33258971	.28505794	.24449991	32
33	.52022873	.44270298	.37702625	.32134271	.27409417	.23397121	33
34	.51002817	.43190534	.36604490	.31047605	.26355209	.22389589	34
35	.50002761	.42137107	.35538340	.29997686	.25341547	.21425444	35
36	.49022315	.41109372	.34503243	.28983272	.24366872	.20502817	36
37	.48061093	.40106705	.33498294	.28003161	.23429685	.19619921	37
38	.47118719	.39128492	.32522615	.27056194	.22528543	.18775044	38
39	.46194822	.38174139	.31575355	.26141251	.21662061	.17966549	39
40	.45289042	.37243062	.30655684	.25257247	.20828904	.17192870	40
41	.44401021	.36334695	.29762800	.24403137	.20027793	.16452507	41
42	.43530413	.35448483	.28895922	.23577910	.19257493	.15744026	42
43	.42676875	.34583886	.28054294	.22780590	.18516820	.15066054	43
44	.41840074	.33740376	.27237178	.22010232	.17804635	.14417276	44
45	.41019680	.32917440	.26443862	.21265924	.17119841	.13796437	45
46	.40215373	.32114576	.25673653	.20546787	.16461386	.13202332	46
47	.39426836	.31331294	.24925876	.19851968	.15828256	.12633810	47
48	.38653761	.30567116	.24199880	.19180645	.15219476	.12089771	48
49	.37895844	.29821576	.23495029	.18532024	.14634112	.11569158	49
50	.37152788	.29094221	.22810708	.17905338	.14071261	.11070965	50

FORMULA, Present Value $= \dfrac{1}{(1+i)^n} = v^n.$

TABLE XXI.

THE PRESENT VALUE OF $1 DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
1	.95238095	.94339623	.93457944	.92592593	.91743119	.90909091	1
2	.90702948	.88999644	.87343873	.85733882	.84167999	.82644628	2
3	.86383760	.83961928	.81629788	.79383224	.77218348	.75131480	3
4	.82270247	.79209366	.76289521	.73502985	.70842521	.68301346	4
5	.78352617	.74725817	.71298618	.68058320	.64993139	.62092132	5
6	.74621540	.70496054	.66634222	.63016963	.59626733	.56447393	6
7	.71068133	.66505711	.62274974	.58349040	.54703424	.51315812	7
8	.67683936	.62741237	.58200910	.54026888	.50186628	.46650738	8
9	.64460892	.59189846	.54393374	.50024897	.46042778	.42409762	9
10	.61391325	.55839478	.50834929	.46319349	.42241081	.38554329	10
11	.58467929	.52678752	.47509280	.42888286	.38753285	.35049390	11
12	.55683742	.49696936	.44401196	.39711376	.35553473	.31863082	12
13	.53032135	.46883902	.41496445	.36769792	.32617865	.28966438	13
14	.50506795	.44230096	.38781724	.34046104	.29924647	.26333125	14
15	.48101710	.41726506	.36244602	.31524171	.27453804	.23939205	15
16	.45811152	.39364628	.33873460	.29189047	.25186976	.21762914	16
17	.43629669	.37136442	.31657439	.27026895	.23107318	.19784467	17
18	.41552065	.35034379	.29586392	.25024903	.21199374	.17985879	18
19	.39573396	.33051301	.27650833	.23171206	.19448967	.16350799	19
20	.37688948	.31180473	.25841900	.21454821	.17843089	.14864363	20
21	.35894236	.29415540	.24151309	.19865575	.16369806	.13513057	21
22	.34184987	.27750510	.22571317	.18394051	.15018171	.12284597	22
23	.32557130	.26179726	.21094688	.17031528	.13778139	.11167816	23
24	.31006791	.24697855	.19714662	.15769934	.12640494	.10152560	24
25	.29530277	.23299863	.18424918	.14601790	.11596784	.09229600	25
26	.28124073	.21981003	.17219549	.13520176	.10639251	.08390545	26
27	.26784832	.20736795	.16093037	.12518682	.09760781	.07627768	27
28	.25509364	.19563014	.15040221	.11591372	.08954845	.06934335	28
29	.24294632	.18455674	.14056282	.10732752	.08215454	.06303941	29
30	.23137745	.17411013	.13136712	.09937733	.07537114	.05730855	30
31	.22035947	.16425484	.12277301	.09201605	.06914783	.05209868	31
32	.20986617	.15495740	.11474113	.08520005	.06343838	.04736244	32
33	.19987254	.14618622	.10723470	.07888893	.05820035	.04305676	33
34	.19035480	.13791153	.10021934	.07304531	.05339481	.03914251	34
35	.18129028	.13010522	.09366294	.06763454	.04898607	.03558410	35
36	.17265741	.12274077	.08753546	.06262458	.04494135	.03234918	36
37	.16443563	.11579318	.08180884	.05798572	.04123059	.02940835	37
38	.15660536	.10923885	.07645686	.05369048	.03782623	.02673486	38
39	.14914797	.10305552	.07145501	.04971341	.03470296	.02430442	39
40	.14204568	.09722219	.06678038	.04603093	.03183758	.02209493	40
41	.13528160	.09171904	.06241157	.04262123	.02920879	.02008630	41
42	.12883962	.08652740	.05832857	.03946411	.02679706	.01826027	42
43	.12270440	.08162962	.05451268	.03654084	.02458446	.01660025	43
44	.11686133	.07700908	.05094643	.03383411	.02255455	.01509113	44
45	.11129651	.07265007	.04761349	.03132788	.02069224	.01371921	45
46	.10599667	.06853781	.04449859	.02900730	.01898371	.01247201	46
47	.10094921	.06465831	.04158747	.02685861	.01741625	.01133819	47
48	.09614211	.06099840	.03886679	.02486908	.01597821	.01030745	48
49	.09156391	.05754566	.03632410	.02302693	.01465891	.00937041	49
50	.08720373	.05428836	.03394776	.02132123	.01344854	.00851855	50

TABLE XXI.

THE PRESENT VALUE OF $1 DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
51	.36424302	.28384606	.22146318	.17299843	.13530059	.10594225	51
52	.35710100	.27692298	.21501280	.16714824	.13009672	.10138014	52
53	.35009902	.27016876	.20875029	.16149589	.12509300	.09701449	53
54	.34323433	.26357928	.20267018	.15603467	.12028173	.09283683	54
55	.33650425	.25715052	.19676717	.15075814	.11565551	.08883907	55
56	.32990613	.25087855	.19103609	.14566004	.11120722	.08501347	56
57	.32343738	.24475956	.18547193	.14073433	.10693002	.08135260	57
58	.31709547	.23878982	.18006983	.13597520	.10281733	.07784938	58
59	.31087791	.23296568	.17482508	.13137701	.09886282	.07449701	59
60	.30478227	.22728359	.16973309	.12693431	.09506040	.07128901	60
61	.29880614	.22174009	.16478941	.12264184	.09140423	.06821915	61
62	.29294720	.21633179	.15998972	.11849453	.08788868	.06528148	62
63	.28720314	.21105541	.15532982	.11448747	.08450835	.06247032	63
64	.28157170	.20590771	.15080565	.11061591	.08125803	.05978021	64
65	.27605069	.20088557	.14641325	.10687528	.07813272	.05720594	65
66	.27063793	.19598593	.14214879	.10326114	.07512761	.05474253	66
67	.26533130	.19120578	.13800853	.09976922	.07223809	.05238519	67
68	.26012873	.18654223	.13398887	.09639538	.06945970	.05012937	68
69	.25502817	.18199241	.13008628	.09313563	.06678818	.04797069	69
70	.25002761	.17755358	.12629736	.08998612	.06421940	.04590497	70
71	.24512511	.17322300	.12261879	.08694311	.06174942	.04392820	71
72	.24031874	.16899805	.11904737	.08400300	.05937444	.04203655	72
73	.23560661	.16487615	.11557997	.08116232	.05709081	.04022637	73
74	.23098687	.16085478	.11221357	.07841770	.05489501	.03849413	74
75	.22645771	.15693149	.10894521	.07576590	.05278366	.03683649	75
76	.22201737	.15310389	.10577205	.07320376	.05075352	.03525023	76
77	.21766408	.14936965	.10269131	.07072827	.04880146	.03373228	77
78	.21339616	.14572649	.09970030	.06833650	.04692449	.03227969	78
79	.20921192	.14217218	.09679641	.06602560	.04511970	.03088965	79
80	.20510973	.13870457	.09397710	.06379285	.04338432	.02955948	80
81	.20108797	.13532153	.09123990	.06163561	.04171570	.02828658	81
82	.19714507	.13202101	.08858243	.05955131	.04011125	.02706850	82
83	.19327948	.12880098	.08600236	.05753750	.03856851	.02590287	83
84	.18948968	.12565949	.08349743	.05559179	.03708510	.02478744	84
85	.18577420	.12259463	.08106547	.05371187	.03565875	.02372003	85
86	.18213157	.11960452	.07870434	.05189553	.03428726	.02269860	86
87	.17856036	.11668733	.07641198	.05014061	.03296852	.02172115	87
88	.17505918	.11384130	.07418639	.04844503	.03170050	.02078579	88
89	.17162665	.11106468	.07202562	.04680679	.03048125	.01989070	89
90	.16826142	.10835579	.06992778	.04522395	.02930889	.01903417	90
91	.16496217	.10571296	.06789105	.04369464	.02818163	.01821451	91
92	.16172762	.10313460	.06591364	.04221705	.02709772	.01743016	92
93	.15855649	.10061912	.06399383	.04078942	.02605550	.01667958	93
94	.15544754	.09816500	.06212993	.03941006	.02505337	.01596132	94
95	.15239955	.09577073	.06032032	.03807736	.02408977	.01527399	95
96	.14941132	.09343486	.05856342	.03678972	.02316324	.01461626	96
97	.14648169	.09115596	.05685769	.03554562	.02227235	.01398685	97
98	.14360950	.08893264	.05520164	.03434359	.02141572	.01338454	98
99	.14079363	.08676355	.05359382	.03318222	.02059204	.01280817	99
100	.13803297	.08464737	.05203284	.03206011	.01980004	.01225663	100

TABLE XXI.

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THE PRESENT VALUE OF $1 DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
51	.08305117	.05121544	.03172688	.01974188	.01233811	.00774414	51
52	.07909635	.04831645	.02965129	.01827952	.01131937	.00704013	52
53	.07532986	.04558156	.02771148	.01692548	.01038474	.00640011	53
54	.07174272	.04300147	.02589858	.01567174	.00952728	.00581829	54
55	.06832640	.04056742	.02420428	.01451087	.00874063	.00528935	55
56	.06507276	.03827115	.02262083	.01343599	.00801892	.00480850	56
57	.06197406	.03610486	.02114096	.01244073	.00735681	.00437136	57
58	.05902291	.03406119	.01975791	.01151920	.00674937	.00397397	58
59	.05621230	.03213320	.01846533	.01066592	.00619208	.00361270	59
60	.05353552	.03031434	.01725732	.00987585	.00568081	.00328427	60
61	.05098621	.02859843	.01612834	.00914431	.00521175	.00298570	61
62	.04855830	.02697965	.01507321	.00846696	.00478142	.00271427	62
63	.04624600	.02545250	.01408711	.00783977	.00438663	.00246752	63
64	.04404381	.02401180	.01316553	.00725905	.00402443	.00224320	64
65	.04194648	.02265264	.01230423	.00672134	.00369214	.00203927	65
66	.03994903	.02137041	.01149928	.00622346	.00338728	.00185388	66
67	.03804670	.02016077	.01074699	.00576247	.00310760	.00168535	67
68	.03623495	.01901959	.01004392	.00533562	.00285101	.00153214	68
69	.03450948	.01794301	.00938684	.00494039	.00261560	.00139285	69
70	.03286617	.01692737	.00877275	.00457443	.00239963	.00126623	70
71	.03130111	.01596922	.00819883	.00423558	.00220150	.00115112	71
72	.02981058	.01506530	.00766246	.00392184	.00201972	.00104647	72
73	.02839103	.01421254	.00716117	.00363133	.00185296	.00095134	73
74	.02703908	.01340806	.00669269	.00336234	.00169996	.00086485	74
75	.02575150	.01264911	.00625485	.00311328	.00155960	.00078623	75
76	.02452524	.01193313	.00584565	.00288267	.00143082	.00071475	76
77	.02335737	.01125767	.00546323	.00266914	.00131268	.00064978	77
78	.02224511	.01062044	.00510582	.00247142	.00120430	.00059070	78
79	.02118582	.01001928	.00477179	.00228835	.00110486	.00053700	79
80	.02017697	.00945215	.00445962	.00211885	.00101363	.00048819	80
81	.01921617	.00891713	.00416787	.00196190	.00092994	.00044381	81
82	.01830111	.00841238	.00389520	.00181657	.00085315	.00040346	82
83	.01742963	.00793621	.00364038	.00168201	.00078271	.00036678	83
84	.01659965	.00748699	.00340222	.00155742	.00071808	.00033344	84
85	.01580919	.00706320	.00317965	.00144205	.00065879	.00030313	85
86	.01505637	.00666339	.00297163	.00133523	.00060440	.00027557	86
87	.01433940	.00628622	.00277723	.00123633	.00055449	.00025052	87
88	.01365657	.00593040	.00259554	.00114475	.00050871	.00022774	88
89	.01300626	.00559471	.00242574	.00105995	.00046670	.00020704	89
90	.01238691	.00527803	.00226704	.00098144	.00042817	.00018822	90
91	.01179706	.00497928	.00211873	.00090874	.00039282	.00017111	91
92	.01123529	.00469743	.00198012	.00084142	.00036038	.00015555	92
93	.01070028	.00443154	.00185058	.00077910	.00033063	.00014141	93
94	.01019074	.00418070	.00172952	.00072138	.00030333	.00012855	94
95	.00970547	.00394405	.00161637	.00066795	.00027828	.00011687	95
96	.00924330	.00372080	.00151063	.00061847	.00025530	.00010624	96
97	.00880315	.00351019	.00141180	.00057266	.00023422	.00009658	97
98	.00838395	.00331150	.00131944	.00053024	.00021488	.00008780	98
99	.00798471	.00312406	.00123312	.00049096	.00019714	.00007982	99
100	.00760449	.00294722	.00115245	.00045459	.00018086	.00007257	100

TABLE XXII.

THE AMOUNT OF $1 PER ANNUM AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1
2	2.020000	2.025000	2.030000	2.035000	2.040000	2.045000	2
3	3.060400	3.075625	3.090900	3.106225	3.121600	3.137025	3
4	4.121608	4.152516	4.183627	4.214943	4.246464	4.278191	4
5	5.204040	5.256329	5.309136	5.362466	5.416323	5.470710	5
6	6.308121	6.387737	6.468410	6.550152	6.632975	6.716892	6
7	7.434283	7.547430	7.662462	7.779408	7.898294	8.019152	7
8	8.582969	8.736116	8.892336	9.051687	9.214226	9.380014	8
9	9.754628	9.954519	10.159106	10.368496	10.582795	10.802114	9
10	10.949721	11.203382	11.463879	11.731393	12.006107	12.288209	10
11	12.168715	12.483466	12.807796	13.141992	13.486351	13.841179	11
12	13.412090	13.795553	14.192030	14.601962	15.025805	15.464032	12
13	14.680332	15.140442	15.617790	16.113030	16.626838	17.159913	13
14	15.973938	16.518953	17.086324	17.676986	18.291911	18.932109	14
15	17.293417	17.931927	18.598914	19.295681	20.023588	20.784054	15
16	18.639285	19.380225	20.156881	20.971030	21.824531	22.719337	16
17	20.012071	20.864730	21.761588	22.705016	23.697512	24.741707	17
18	21.412312	22.386349	23.414435	24.499691	25.645413	26.855084	18
19	22.840559	23.946007	25.116868	26.357181	27.671229	29.063562	19
20	24.297370	25.544658	26.870374	28.279682	29.778079	31.371423	20
21	25.783317	27.183274	28.676486	30.269471	31.969202	33.783137	21
22	27.298984	28.862856	30.536780	32.328902	34.247970	36.303378	22
23	28.844963	30.584427	32.452884	34.460414	36.617889	38.937030	23
24	30.421862	32.349038	34.426470	36.666528	39.082604	41.689196	24
25	32.030300	34.157764	36.459264	38.949857	41.645908	44.565210	25
26	33.670906	36.011708	38.553042	41.313102	44.311745	47.570645	26
27	35.344324	37.912001	40.709634	43.759060	47.084214	50.711324	27
28	37.051210	39.859801	42.930923	46.290627	49.967583	53.993333	28
29	38.792235	41.856296	45.218850	48.910799	52.966286	57.423033	29
30	40.568079	43.902703	47.575416	51.622677	56.084938	61.007070	30
31	42.379441	46.000271	50.002678	54.429471	59.328335	64.752388	31
32	44.227030	48.150278	52.502759	57.334502	62.701469	68.666245	32
33	46.111570	50.354034	55.077841	60.341210	66.209527	72.756226	33
34	48.033802	52.612885	57.730177	63.453152	69.857909	77.030256	34
35	49.994478	54.928207	60.462082	66.674013	73.652225	81.496618	35
36	51.994367	57.301413	63.275944	70.007603	77.598314	86.163966	36
37	54.034255	59.733948	66.174223	73.457869	81.702246	91.041344	37
38	56.114940	62.227297	69.159449	77.028895	85.970336	96.138205	38
39	58.237238	64.782979	72.234233	80.724906	90.409150	101.464424	39
40	60.401983	67.402554	75.401260	84.550278	95.025516	107.030323	40
41	62.610023	70.087617	78.663298	88.509537	99.826536	112.846688	41
42	64.862223	72.839808	82.023196	92.607371	104.819598	118.924789	42
43	67.159468	75.660803	85.483892	96.848629	110.012382	125.276404	43
44	69.502657	78.552323	89.048409	101.238331	115.412877	131.913842	44
45	71.892710	81.516131	92.719861	105.781673	121.029392	138.849965	45
46	74.330564	84.554034	96.501457	110.484031	126.870568	146.098214	46
47	76.817176	87.667885	100.396501	115.350973	132.945390	153.672633	47
48	79.353519	90.859582	104.408396	120.388257	139.263206	161.587902	48
49	81.940590	94.131072	108.540648	125.601846	145.833734	169.859357	49
50	84.579401	97.484349	112.796867	130.997910	152.667084	178.503028	50

FORMULA, Amount $= \dfrac{(1+i)^n - 1}{i} = 1 + (1+i) + \ldots + (1+i)^{n-1}.$

TABLE XXII.

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THE AMOUNT OF $1 PER ANNUM AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1
2	2.050000	2.060000	2.070000	2.080000	2.090000	2.100000	2
3	3.152500	3.183600	3.214900	3.246400	3.278100	3.310000	3
4	4.310125	4.374616	4.439943	4.506112	4.573129	4.641000	4
5	5.525631	5.637093	5.750739	5.866601	5.984711	6.105100	5
6	6.801913	6.975319	7.153291	7.335929	7.523335	7.715610	6
7	8.142008	8.393838	8.654021	8.922803	9.200435	9.487171	7
8	9.549109	9.897468	10.259803	10.636628	11.028474	11.435888	8
9	11.026564	11.491316	11.977989	12.487558	13.021036	13.579477	9
10	12.577893	13.180795	13.816448	14.486562	15.192930	15.937425	10
11	14.206787	14.971643	15.783599	16.645487	17.560293	18.531167	11
12	15.917127	16.869941	17.888451	18.977126	20.140720	21.384284	12
13	17.712983	18.882138	20.140643	21.495297	22.953385	24.522712	13
14	19.598632	21.015066	22.550488	24.214920	26.019189	27.974983	14
15	21.578564	23.275970	25.129022	27.152114	29.360916	31.772482	15
16	23.657492	25.672528	27.888054	30.324283	33.003399	35.949730	16
17	25.840366	28.212880	30.840217	33.750226	36.973705	40.544703	17
18	28.132385	30.905653	33.999033	37.450244	41.301338	45.599173	18
19	30.539004	33.759992	37.378965	41.446263	46.018458	51.159090	19
20	33.065954	36.785591	40.995492	45.761964	51.160120	57.274999	20
21	35.719252	39.992727	44.865177	50.422921	56.764530	64.002499	21
22	38.505214	43.392290	49.005739	55.456755	62.873338	71.402749	22
23	41.430475	46.995828	53.436141	60.893296	69.531939	79.543024	23
24	44.501999	50.815577	58.176671	66.764759	76.789813	88.497327	24
25	47.727099	54.864512	63.249038	73.105940	84.700896	98.347059	25
26	51.113454	59.156383	68.676470	79.954415	93.323977	109.181765	26
27	54.669126	63.705766	74.483823	87.350768	102.723135	121.099942	27
28	58.402583	68.528112	80.697691	95.338830	112.968217	134.209936	28
29	62.322712	73.639798	87.346529	103.965936	124.135356	148.630930	29
30	66.438848	79.058186	94.460786	113.283211	136.307539	164.494023	30
31	70.760790	84.801677	102.073041	123.345868	149.575217	181.943425	31
32	75.298829	90.889778	110.218154	134.213537	164.036987	201.137767	32
33	80.063771	97.343165	118.933425	145.950620	179.800315	222.251544	33
34	85.066959	104.183755	128.258765	158.626670	196.982344	245.476699	34
35	90.320307	111.434780	138.236878	172.316804	215.710755	271.024368	35
36	95.836323	119.120867	148.913460	187.102148	236.124723	299.126805	36
37	101.628139	127.268119	160.337402	203.070320	258.375948	330.039486	37
38	107.709546	135.904206	172.561020	220.315945	282.629783	364.043434	38
39	114.095023	145.058458	185.640292	238.941221	309.066463	401.447778	39
40	120.799774	154.761966	199.635112	259.056519	337.882445	442.592556	40
41	127.839763	165.047684	214.609570	280.781040	369.291865	487.851811	41
42	135.231751	175.950545	230.632240	304.243523	403.528133	537.636992	42
43	142.993339	187.507577	247.776496	329.583005	440.845665	592.400692	43
44	151.143006	199.758032	266.120851	356.949646	481.521775	652.640761	44
45	159.700156	212.743514	285.749311	386.505617	525.858734	718.904837	45
46	168.685164	226.508125	306.751763	418.426067	574.186021	791.795321	46
47	178.119422	241.098612	329.224386	452.900152	626.862762	871.974853	47
48	188.025393	256.564529	353.270093	490.132164	684.280411	960.172338	48
49	198.426663	272.958401	378.999000	530.342737	746.865648	1057.189572	49
50	209.347996	290.335905	406.528929	573.770156	815.083556	1163.908529	50

THE AMOUNT OF $1 PER ANNUM AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
51	87.270989	100.921458	117.180773	136.582837	159.773767	187.535665	51
52	90.016409	104.444494	121.696197	142.363236	167.164718	196.974769	52
53	92.816737	108.055606	126.347082	148.345950	174.851306	206.838634	53
54	95.673072	111.756996	131.137495	154.538058	182.845359	217.146373	54
55	98.586534	115.550921	136.071620	160.946890	191.159173	227.917959	55
56	101.558264	119.439694	141.153768	167.580031	199.805540	239.174268	56
57	104.589430	123.425687	146.388381	174.445332	208.797762	250.937110	57
58	107.681218	127.511329	151.780033	181.550919	218.149672	263.229279	58
59	110.834843	131.699112	157.333434	188.905201	227.875659	276.074597	59
60	114.051539	135.991590	163.053437	196.516883	237.990685	289.497954	60
61	117.332570	140.391380	168.945040	204.394974	248.510313	303.525362	61
62	120.679222	144.901164	175.013391	212.548798	259.450725	318.184003	62
63	124.092806	149.523693	181.263793	220.988006	270.828754	333.502283	63
64	127.574662	154.261786	187.701707	229.722586	282.661904	349.509886	64
65	131.126155	159.118330	194.332758	238.762876	294.968380	366.237831	65
66	134.748679	164.096289	201.162741	248.119577	307.767116	383.718533	66
67	138.443652	169.198696	208.197623	257.803762	321.077800	401.985867	67
68	142.212525	174.428663	215.443551	267.826894	334.920912	421.075231	68
69	146.056776	179.789380	222.906858	278.200835	349.317749	441.023617	69
70	149.977911	185.284114	230.594064	288.937865	364.290459	461.869680	70
71	153.977469	190.916217	238.511886	300.050690	379.862077	483.653815	71
72	158.057019	196.689123	246.667242	311.552464	396.056560	506.418237	72
73	162.218159	202.606351	255.067259	323.456800	412.898823	530.207057	73
74	166.462522	208.671509	263.719277	335.777788	430.414776	555.066375	74
75	170.791773	214.888297	272.630856	348.530011	448.631367	581.044362	75
76	175.207608	221.260504	281.809781	361.728561	467.576621	608.191358	76
77	179.711760	227.792017	291.264075	375.389061	487.279686	636.559969	77
78	184.305996	234.486818	301.001997	389.527678	507.770873	666.205168	78
79	188.992115	241.348988	311.032057	404.161147	529.081708	697.184400	79
80	193.771958	248.382713	321.363019	419.306787	551.244977	729.557699	80
81	198.647397	255.592280	332.003909	434.982524	574.294776	763.387795	81
82	203.620345	262.982087	342.964026	451.206913	598.266567	798.740246	82
83	208.692752	270.556640	354.252947	467.999155	623.197230	835.683557	83
84	213.866607	278.320556	365.880536	485.379125	649.125119	874.289317	84
85	219.143939	286.278570	377.856952	503.367394	676.090123	914.632336	85
86	224.526818	294.435534	390.192660	521.985253	704.133728	956.790791	86
87	230.017354	302.796422	402.898440	541.254737	733.299078	1000.846377	87
88	235.617701	311.366333	415.985393	561.198653	763.631041	1046.884464	88
89	241.330055	320.150491	429.464955	581.840606	795.176282	1094.994265	89
90	247.156656	329.154253	443.348904	603.205027	827.983334	1145.269007	90
91	253.099789	338.383110	457.649371	625.317203	862.102667	1197.806112	91
92	259.161785	347.842687	472.378852	648.203305	897.586774	1252.707387	92
93	265.345021	357.538755	487.550217	671.890421	934.490244	1310.079219	93
94	271.651921	367.477223	503.176724	696.406585	972.869854	1370.032784	94
95	278.084960	377.664154	519.272026	721.780816	1012.784648	1432.684259	95
96	284.646659	388.105758	535.850186	748.043144	1054.296034	1498.155051	96
97	291.339592	398.808402	552.925692	775.224654	1097.467876	1566.572028	97
98	298.166384	409.778612	570.513463	803.357517	1142.366591	1638.067770	98
99	305.129712	421.023077	588.628867	832.475030	1189.061254	1712.780819	99
100	312.232306	432.548654	607.287733	862.611657	1237.623705	1790.855956	100

TABLE XXII. 219

THE AMOUNT OF $1 PER ANNUM AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	10 Per Cent.	Years.
51	220.815396	308.756059	435.985955	620.671769	1281.299382	51
52	232.856165	328.281422	467.504971	671.325510	1410.429320	52
53	245.498974	348.978308	501.230319	726.031551	1552.472252	53
54	258.773922	370.917006	537.316442	785.114075	1708.719477	54
55	272.712618	394.172027	575.928593	848.923201	1880.591425	55
56	287.348249	418.822348	617.243594	917.837058	2069.650567	56
57	302.715662	444.951689	661.450646	992.264022	2277.615624	57
58	318.851445	472.648790	708.752191	1072.645144	2506.377186	58
59	335.794017	502.007718	759.364844	1159.456755	2758.014905	59
60	353.583718	533.128181	813.520383	1253.213296	3034.816395	60
61	372.262904	566.115872	871.466810	1354.470360	3339.298035	61
62	391.876049	601.082824	933.469487	1463.827988	3674.227838	62
63	412.469851	638.147793	999.812351	1581.934227	4042.650622	63
64	434.093344	677.436661	1070.799216	1709.488966	4447.915685	64
65	456.798011	719.082861	1146.755161	1847.248083	4893.707253	65
66	480.637912	763.227832	1228.028022	1996.027929	5384.077978	66
67	505.669807	810.021502	1314.989983	2156.710164	5923.485776	67
68	531.953298	859.622792	1408.039282	2330.246977	6516.834354	68
69	559.550963	912.200160	1507.602032	2517.666735	7169.517789	69
70	588.528511	967.932170	1614.134174	2720.080074	7887.469568	70
71	618.954936	1027.008100	1728.123566	2938.686480	8677.216525	71
72	650.902683	1089.628586	1850.092216	3174.781398	9545.938177	72
73	684.447817	1156.006301	1980.598671	3429.763910	10501.531995	73
74	719.670208	1226.366679	2120.240578	3705.145023	11552.685195	74
75	756.653719	1300.948680	2269.657419	4002.556624	12708.953714	75
76	795.486404	1380.005601	2429.533438	4323.761154	13980.849085	76
77	836.260725	1463.805937	2600.600779	4670.662047	15379.933994	77
78	879.073761	1552.634293	2783.642833	5045.315011	16918.927393	78
79	924.027449	1646.792350	2979.497831	5449.940211	18611.820133	79
80	971.228821	1746.599891	3189.062680	5886.935428	20474.002146	80
81	1020.790262	1852.395885	3413.297067	6358.890263	22522.402360	81
82	1072.829776	1964.539638	3653.227862	6868.601484	24775.642596	82
83	1127.471264	2083.412016	3909.953812	7419.089602	27254.206856	83
84	1184.844828	2209.416737	4184.650579	8013.616770	29980.627542	84
85	1245.087069	2342.981741	4478.576120	8655.706112	32979.690296	85
86	1308.341422	2484.560646	4793.076448	9349.162601	36278.659326	86
87	1374.758493	2634.634285	5129.591799	10098.095609	39907.525258	87
88	1444.496418	2793.712342	5489.663225	10906.943258	43899.277784	88
89	1517.721239	2962.335082	5874.939651	11780.498718	48290.205562	89
90	1594.607301	3141.075187	6287.185427	12723.938616	53120.226119	90
91	1675.337666	3330.539698	6728.288407	13742.853705	58433.248730	91
92	1760.104549	3531.372080	7200.268595	14843.282002	64277.573603	92
93	1849.109777	3744.254405	7705.287397	16031.744562	70706.330964	93
94	1942.565266	3969.909669	8245.657515	17315.284127	77777.964060	94
95	2040.693529	4209.104250	8823.853541	18701.506857	85556.760466	95
96	2143.728205	4462.650505	9442.523288	20198.627405	94113.436513	96
97	2251.914616	4731.409535	10104.499919	21815.517598	103525.780164	97
98	2365.510346	5016.294107	10812.814913	23561.759006	113879.358180	98
99	2484.785864	5318.271753	11570.711957	25447.699726	125268.293998	99
100	2610.025157	5638.368059	12381.661794	27484.515704	137796.123398	100

THE PRESENT VALUE OF $1 PER ANNUM FOR ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
1	.980392	.975610	.970874	.966184	.961538	.956938	1
2	1.941561	1.927424	1.913470	1.899694	1.886095	1.872668	2
3	2.883883	2.856024	2.828611	2.801637	2.775091	2.748964	3
4	3.807729	3.761974	3.717098	3.673079	3.629895	3.587526	4
5	4.713460	4.645828	4.579707	4.515052	4.451822	4.389977	5
6	5.601431	5.508125	5.417191	5.328553	5.242137	5.157872	6
7	6.471991	6.349391	6.230283	6.114544	6.002055	5.892701	7
8	7.325481	7.170137	7.019692	6.873956	6.732745	6.595886	8
9	8.162237	7.970866	7.786109	7.607687	7.435332	7.268790	9
10	8.982585	8.752064	8.530203	8.316605	8.110896	7.912718	10
11	9.786848	9.514209	9.252624	9.001551	8.760477	8.528917	11
12	10.575341	10.257765	9.954004	9.663334	9.385074	9.118581	12
13	11.348374	10.983185	10.634955	10.302738	9.985648	9.682852	13
14	12.106249	11.690912	11.296073	10.920520	10.563123	10.222825	14
15	12.849264	12.381378	11.937935	11.517411	11.118387	10.739546	15
16	13.577709	13.055003	12.561102	12.094117	11.652296	11.234015	16
17	14.291872	13.712198	13.166118	12.651321	12.165669	11.707191	17
18	14.992031	14.353364	13.753513	13.189682	12.659297	12.159992	18
19	15.678462	14.978891	14.323799	13.709837	13.133939	12.593294	19
20	16.351433	15.589162	14.877475	14.212403	13.590326	13.007936	20
21	17.011209	16.184549	15.415024	14.697974	14.029160	13.404724	21
22	17.658048	16.765413	15.936917	15.167125	14.451115	13.784425	22
23	18.292204	17.332111	16.443608	15.620410	14.856842	14.147775	23
24	18.913926	17.884986	16.935542	16.058368	15.246963	14.495478	24
25	19.523456	18.424376	17.413148	16.481515	15.622080	14.828209	25
26	20.121036	18.950611	17.876842	16.890352	15.982769	15.146611	26
27	20.706898	19.464011	18.327031	17.285365	16.329586	15.451303	27
28	21.281272	19.964889	18.764108	17.667019	16.663063	15.742874	28
29	21.844385	20.453550	19.188455	18.035767	16.983715	16.021889	29
30	22.396456	20.930293	19.600441	18.392045	17.292033	16.288889	30
31	22.937702	21.395407	20.000428	18.736276	17.588494	16.544391	31
32	23.468335	21.849178	20.388766	19.068865	17.873552	16.788891	32
33	23.988564	22.291881	20.765792	19.390208	18.147646	17.022862	33
34	24.498592	22.723786	21.131837	19.700684	18.411198	17.246758	34
35	24.998619	23.145157	21.487220	20.000661	18.664613	17.461012	35
36	25.488842	23.556251	21.832252	20.290494	18.908282	17.666041	36
37	25.969453	23.957318	22.167235	20.570525	19.142579	17.862240	37
38	26.440641	24.348603	22.492462	20.841087	19.367864	18.049990	38
39	26.902589	24.730344	22.808215	21.102500	19.584485	18.229656	39
40	27.355479	25.102775	23.114772	21.355072	19.792774	18.401584	40
41	27.799489	25.466122	23.412400	21.599104	19.993052	18.566109	41
42	28.234794	25.820607	23.701359	21.834883	20.185627	18.723550	42
43	28.661562	26.166446	23.981902	22.062689	20.370795	18.874210	43
44	29.079963	26.503849	24.254274	22.282791	20.548841	19.018383	44
45	29.490160	26.833024	24.518713	22.495450	20.720040	19.156347	45
46	29.892314	27.154170	24.775449	22.700918	20.884654	19.288371	46
47	30.286582	27.467483	25.024708	22.899438	21.042936	19.414709	47
48	30.673120	27.773154	25.266707	23.091244	21.195131	19.535607	48
49	31.052078	28.071369	25.501657	23.276564	21.341472	19.651298	49
50	31.423606	28.362312	25.729764	23.455618	21.482185	19.762008	50

FORMULA, Present Value $= \dfrac{1-(1+i)^{-n}}{i} = \dfrac{1-v^n}{i}$.

TABLE XXIII. 221

THE PRESENT VALUE OF $1 PER ANNUM FOR ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
1	.952381	.943396	.934579	.925926	.917431	.909091	1
2	1.859410	1.833393	1.808018	1.783265	1.759111	1.735537	2
3	2.723248	2.673012	2.624316	2.577097	2.531295	2.486852	3
4	3.545951	3.465106	3.387211	3.312127	3.239720	3.169865	4
5	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787	5
6	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261	6
7	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419	7
8	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	8
9	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024	9
10	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567	10
11	8.306414	7.886875	7.498674	7.138964	6.805191	6.495061	11
12	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692	12
13	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356	13
14	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	14
15	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080	15
16	10.837770	10.105895	9.446649	8.851369	8.312558	7.823709	16
17	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553	17
18	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412	18
19	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920	19
20	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564	20
21	12.821153	11.764077	10.835527	10.016803	9.292244	8.648694	21
22	13.163003	12.041582	11.061241	10.200744	9.442425	8.771540	22
23	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218	23
24	13.798642	12.550358	11.469334	10.528758	9.706612	8.984744	24
25	14.093945	12.783356	11.653583	10.674776	9.822580	9.077040	25
26	14.375185	13.003166	11.825779	10.809978	9.928972	9.160945	26
27	14.643034	13.210534	11.986709	10.935165	10.026580	9.237223	27
28	14.898127	13.406164	12.137111	11.051078	10.116128	9.306567	28
29	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606	29
30	15.372451	13.764831	12.409041	11.257783	10.273654	9.426914	30
31	15.592811	13.929086	12.531814	11.349799	10.342802	9.479013	31
32	15.802677	14.084043	12.646555	11.434999	10.406240	9.526376	32
33	16.002549	14.230230	12.753790	11.513888	10.464441	9.569432	33
34	16.192904	14.368141	12.854009	11.586934	10.517835	9.608575	34
35	16.374194	14.498246	12.947672	11.654568	10.566821	9.644159	35
36	16.546852	14.620987	13.035208	11.717193	10.611763	9.676508	36
37	16.711287	14.736780	13.117017	11.775179	10.652993	9.705917	37
38	16.867893	14.846019	13.193473	11.828869	10.690820	9.732651	38
39	17.017041	14.949075	13.264928	11.878582	10.725523	9.756956	39
40	17.159086	15.046297	13.331709	11.924613	10.757360	9.779051	40
41	17.294368	15.138016	13.394120	11.967235	10.786569	9.799137	41
42	17.423208	15.224543	13.452449	12.006699	10.813366	9.817397	42
43	17.545912	15.306173	13.506962	12.043240	10.837951	9.833998	43
44	17.662773	15.383182	13.557908	12.077074	10.860505	9.849089	44
45	17.774070	15.455832	13.605522	12.108402	10.881197	9.862808	45
46	17.880067	15.524370	13.650020	12.137409	10.900181	9.875280	46
47	17.981016	15.589028	13.691608	12.164267	10.917597	9.886618	47
48	18.077158	15.650027	13.730474	12.189136	10.933575	9.896926	48
49	18.168722	15.707572	13.766799	12.212163	10.948234	9.906296	49
50	18.255925	15.761861	13.800746	12.233485	10.961683	9.914814	50

TABLE XXIII.

THE PRESENT VALUE OF $1 PER ANNUM FOR ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
51	31.787849	28.646158	25.951227	23.628616	21.617485	19.867950	51
52	32.144950	28.923081	26.166240	23.795765	21.747582	19.969330	52
53	32.495049	29.193249	26.374990	23.957260	21.872675	20.066345	53
54	32.838283	29.456829	26.577660	24.113295	21.992957	20.159181	54
55	33.174788	29.713979	26.774428	24.264053	22.108612	20.248021	55
56	33.504694	29.964858	26.965464	24.409713	22.219819	20.333034	56
57	33.828131	30.209617	27.150936	24.550448	22.326749	20.414387	57
58	34.145226	30.448407	27.331005	24.686423	22.429567	20.492236	58
59	34.456104	30.681373	27.505831	24.817800	22.528430	20.566733	59
60	34.760887	30.908656	27.675564	24.944734	22.623490	20.638022	60
61	35.059693	31.130397	27.840353	25.067376	22.714894	20.706241	61
62	35.352640	31.346728	28.000343	25.185870	22.802783	20.771523	62
63	35.639843	31.557784	28.155673	25.300358	22.887291	20.833993	63
64	35.921415	31.763691	28.306478	25.410974	22.968549	20.893773	64
65	36.197466	31.964577	28.452891	25.517849	23.046682	20.950979	65
66	36.468103	32.160563	28.595040	25.621110	23.121810	21.005722	66
67	36.733435	32.351769	28.733049	25.720880	23.194048	21.058107	67
68	36.993564	32.538311	28.867038	25.817275	23.263507	21.108236	68
69	37.248592	32.720303	28.997124	25.910411	23.330296	21.156207	69
70	37.498619	32.897857	29.123421	26.000397	23.394515	21.202112	70
71	37.743744	33.071080	29.246040	26.087340	23.456264	21.246040	71
72	37.984063	33.240078	29.365087	26.171343	23.515639	21.288077	72
73	38.219670	33.404954	29.480667	26.252505	23.572730	21.328303	73
74	38.450657	33.565809	29.592881	26.330923	23.627625	21.366797	74
75	38.677114	33.722740	29.701826	26.406689	23.680408	21.403634	75
76	38.899132	33.875844	29.807598	26.479892	23.731162	21.438884	76
77	39.116796	34.025214	29.910290	26.550621	23.779963	21.472616	77
78	39.330192	34.170940	30.009990	26.618957	23.826888	21.504896	78
79	39.539404	34.313113	30.106786	26.684983	23.872008	21.535785	79
80	39.744514	34.451817	30.200763	26.748776	23.915392	21.565345	80
81	39.945602	34.587139	30.292003	26.810411	23.957108	21.593631	81
82	40.142747	34.719160	30.380586	26.869963	23.997219	21.620700	82
83	40.336026	34.847961	30.466588	26.927500	24.035787	21.646603	83
84	40.525516	34.973620	30.550086	26.983092	24.072872	21.671390	84
85	40.711290	35.096215	30.631151	27.036804	24.108531	21.695110	85
86	40.893422	35.215819	30.709855	27.088699	24.142818	21.717809	86
87	41.071982	35.332507	30.786267	27.138840	24.175787	21.739530	87
88	41.247041	35.446348	30.860454	27.187285	24.207487	21.760316	88
89	41.418668	35.557413	30.932479	27.234092	24.237969	21.780207.	89
90	41.586929	35.665768	31.002407	27.279316	24.267278	21.799241	90
91	41.751891	35.771481	31.070298	27.323010	24.295459	21.817455	91
92	41.913619	35.874 16	31.136212	27.365227	24.322557	21.834885	92
93	42.072175	35.975235	31.200206	27.406017	24.348612	21.851565	93
94	42.227623	36.073400	31.262336	27.445427	24.373666	21.867526	94
95	42.380023	36.169171	31.322656	27.483504	24.397756	21.882800	95
96	42.529434	36.262606	31.381219	27.520294	24.420919	21.897417	96
97	42.675916	36.353762	31.438077	27.555839	24.443191	21.911403	97
98	42.819525	36.442694	31.493279	27.590183	24.464607	21.924788	98
99	42.960319	36.529458	31.546872	27.623365	24.485199	21.937596	99
100	43.098352	36.614105	31.598905	27.655425	24.504999	21.949853	100
Perp.	50.000000	40.000000	33.333333	28.571429	25.000000	22.222222	Perp.

TABLE XXIII.

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THE PRESENT VALUE OF $1 PER ANNUM FOR ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
51	18.338977	15.813076	13.832473	12.253227	10.974021	9.922559	51
52	18.418073	15.861393	13.862124	12.271506	10.985340	9.929599	52
53	18.493403	15.906974	13.889836	12.288432	10.995725	9.935999	53
54	18.565146	15.949976	13.915735	12.304103	11.005252	9.941817	54
55	18.633472	15.990543	13.939939	12.318614	11.013993	9.947107	55
56	18.698545	16.028814	13.962560	12.332050	11.022012	9.951915	56
57	18.760519	16.064919	13.983701	12.344491	11.029369	9.956286	57
58	18.819542	16.098980	14.003459	12.356010	11.036118	9.960260	58
59	18.875754	16.131113	14.021924	12.366676	11.042310	9.963873	59
60	18.929290	16.161428	14.039181	12.376552	11.047991	9.967157	60
61	18.980276	16.190026	14.055309	12.385696	11.053203	9.970143	61
62	19.028834	16.217006	14.070383	12.394163	11.057984	9.972857	62
63	19.075080	16.242458	14.084470	12.402003	11.062371	9.975325	63
64	19.119124	16.266470	14.097635	12.409262	11.066395	9.977568	64
65	19.161070	16.289123	14.109940	12.415983	11.070087	9.979607	65
66	19.201019	16.310493	14.121439	12.422207	11.073475	9.981461	66
67	19.239066	16.330654	14.132186	12.427969	11.076582	9.983147	67
68	19.275301	16.349673	14.142230	12.433305	11.079433	9.984679	68
69	19.309810	16.367617	14.151617	12.438245	11.082049	9.986071	69
70	19.342677	16.384544	14.160389	12.442820	11.084449	9.987338	70
71	19.373978	16.400513	14.168588	12.447055	11.086650	9.988489	71
72	19.403788	16.415578	14.176251	12.450977	11.088670	9.989535	72
73	19.432179	16.429791	14.183412	12.454608	11.090523	9.990487	73
74	19.459218	16.443199	14.190104	12.457971	11.092223	9.991351	74
75	19.484970	16.455848	14.196359	12.461084	11.093782	9.992138	75
76	19.509495	16.467781	14.202205	12.463967	11.095213	9.992852	76
77	19.532853	16.479039	14.207668	12.466636	11.096526	9.993502	77
78	19.555098	16.489659	14.212774	12.469107	11.097730	9.994093	78
79	19.576284	16.499679	14.217546	12.471396	11.098835	9.994630	79
80	19.596460	16.509131	14.222005	12.473514	11.099849	9.995118	80
81	19.615677	16.518048	14.226173	12.475476	11.100778	9.995562	81
82	19.633978	16.526460	14.230069	12.477293	11.101632	9.995965	82
83	19.651407	16.534396	14.233709	12.478975	11.102414	9.996332	83
84	19.668007	16.541883	14.237111	12.480532	11.103132	9.996666	84
85	19.683816	16.548947	14.240291	12.481974	11.103791	9.996969	85
86	19.698873	16.555610	14.243262	12.483310	11.104396	9.997244	86
87	19.713212	16.561896	14.246040	12.484546	11.104950	9.997495	87
88	19.726869	16.567827	14.248635	12.485691	11.105459	9.997723	88
89	19.739875	16.573421	14.251061	12.486751	11.105926	9.997930	89
90	19.752262	16.578699	14.253328	12.487732	11.106354	9.998118	90
91	19.764059	16.583679	14.255447	12.488641	11.106746	9.998289	91
92	19.775294	16.588376	14.257427	12.489482	11.107107	9.998444	92
93	19.785994	16.592808	14.259277	12.490261	11.107438	9.998586	93
94	19.796185	16.596988	14.261007	12.490983	11.107741	9.998714	94
95	19.805891	16.600932	14.262623	12.491651	11.108019	9.998831	95
96	19.815134	16.604653	14.264134	12.492269	11.108274	9.998938	96
97	19.823937	16.608163	14.265546	12.492842	11.108509	9.999034	97
98	19.832321	16.611475	14.266865	12.493372	11.108724	9.999122	98
99	19.840306	16.614599	14.268098	12.493863	11.108921	9.999202	99
100	19.847910	16.617546	14.269251	12.494318	11.109102	9.999274	100
Perp.	20.000000	16.666667	14.285714	12.500000	11.111111	10.000000	Perp.

TABLE XXIV.

THE ANNUITY WHICH $1 WILL PURCHASE FOR ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
1	1.02000000	1.02500000	1.03000000	1.03500000	1.04000000	1.04500000	1
2	0.51504950	0.51882716	0.52261084	0.52640049	0.53019608	0.53399756	2
3	.34675467	.35013717	.35353036	.35693418	.36034854	.36377336	3
4	.26262375	.26581788	.26902705	.27225114	.27549005	.27874365	4
5	.21215839	.21524686	.21835457	.22148137	.22462711	.22779164	5
6	0.17852581	0.18154997	0.18459750	0.18766821	0.19076190	0.19387839	6
7	.15451195	.15749543	.16050635	.16354449	.16660961	.16970147	7
8	.13650980	.13946735	.14245639	.14547665	.14852783	.15160965	8
9	.12251544	.12545689	.12843386	.13144601	.13449299	.13757447	9
10	.11132653	.11425876	.11723051	.12024137	.12329094	.12637882	10
11	0.10217794	0.10510596	0.10807745	0.11109197	0.11414904	0.11724818	11
12	.09455960	.09748713	·10046209	.10348395	.10655217	.10966619	12
13	.08811835	.09104827	.09402954	.09706157	.10014373	.10327535	13
14	.08260197	.08553653	.08852634	.09157073	.09466897	.09782032	14
15	.07782547	.08076646	.08376658	.08682507	.08994110	.09311381	15
16	0.07365013	0.07659899	0.07961085	0.08268483	0.08582000	0.08901537	16
17	.06996984	.07292777	.07595253	.07904313	.08219852	.08541758	17
18	.06670210	.06967008	.07270870	.07581684	.07899333	.08223690	18
19	.06378177	.06676062	.06981388	.07294033	.07613862	.07940734	19
20	.06115672	.06414713	.06721571	.07036108	.07358175	.07687614	20
21	0.05878477	0.06178733	0.06487178	0.06803659	0.07128011	0.07460057	21
22	.05663140	.05964660	.06274739	.06593207	.06919881	.07254565	22
23	.05466810	.05769638	.06081390	.06401880	.06730906	.07068249	23
24	.05287110	.05591282	.05904742	.06227283	.06558683	.06898703	24
25	.05122044	.05427592	.05742787	.06067404	.06401196	.06743903	25
26	0.04969923	0.05276875	0.05593829	0.05920540	0.06256738	0.06602137	26
27	.04829309	.05137687	.05456421	.05785241	.06123854	.06471949	27
28	.04698967	.05008793	.05329323	.05660265	.06001298	.06352081	28
29	.04577835	.04889127	.05211467	.05544538	.05887993	.06241461	29
30	.04464992	.04777764	.05101926	.05437133	.05783010	.06139154	30
31	0.04359635	0.04673900	0.04999893	0.05337240	0.05685535	0.06044345	31
32	.04261061	.04576831	.04904662	.05244150	.05594859	.05956320	32
33	.04168653	.04485938	.04815612	.05157242	.05510357	.05874453	33
34	.04081867	.04400675	.04732196	.05075966	.05431477	.05798191	34
35	.04000221	.04320558	.04653929	.04999835	.05357732	.05727045	35
36	0.03923285	0.04245158	0.04580379	0.04928416	0.05288688	0.05660578	36
37	.03850678	.04174090	.04511162	.04861325	.05223956	.05598402	37
38	.03782057	.04107012	.04445934	.04798214	.05163192	.05540169	38
39	.03717114	.04043615	.04384385	.04738775	.05106083	.05485567	39
40	.03655575	.03983623	.04326238	.04682728	.05052349	.05434315	40
41	0.03597188	0.03926786	0.04271241	0.04629822	0.05001738	0.05386158	41
42	.03541729	.03872876	.04219168	.04579828	.04954020	.05340868	42
43	.03488993	.03821688	.04169811	.04532539	.04908989	.05298235	43
44	.03438794	.03773037	.04122985	.04487768	.04866454	.05258071	44
45	.03390962	.03726751	.04078518	.04445343	.04826246	.05220202	45
46	0.03345342	0.03682676	0.04036254	0.04405108	0.04788205	0.05184471	46
47	.03301792	.03640669	.03996051	.04366919	.04752189	.05150734	47
48	.03260184	.03600599	.03957777	.04330646	.04718065	.05118858	48
49	.03220396	.03562348	.03921314	.04296167	.04685712	.05088722	49
50	.03182321	.03525806	.03886546	.04263371	.04655020	.05060215	50

FORMULA, $Annuity = \dfrac{i}{1 - (1 + i)^{-n}} = \dfrac{i}{1 - v^n}.$

TABLE XXIV. 225

THE ANNUITY WHICH $1 WILL PURCHASE FOR ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
1	1.05000000	1.06000000	1.07000000	1.08000000	1.09000000	1.10000000	1
2	0.53780488	0.54543689	0.55309179	0.56076923	0.56846890	0.57619048	2
3	.36720856	.37410981	.38105166	.38803351	.39505476	.40211480	3
4	.28201183	.28859149	.29522812	.30192080	.30866866	.31547080	4
5	.23097480	.23739640	.24389069	.25045645	.25709246	.26379748	5
6	0.19701747	0.20336263	0.20979580	0.21631539	0.22291978	0.22960738	6
7	.17281982	.17913502	.18555322	.19207240	.19869052	.20540550	7
8	.15472181	.16103594	.16746776	.17401476	.18067438	.18744402	8
9	.14069008	.14702224	.15348647	.16007971	.16679880	.17364054	9
10	.12950458	.13586796	.14237750	.14902949	.15582009	.16274540	10
11	0.12038889	0.12679294	0.13335690	0.14007634	0.14694666	0.15396314	11
12	.11282541	.11927703	.12590199	.13269502	.13965066	.14676332	12
13	.10645577	.11296011	.11965085	.12652181	.13356656	.14077852	13
14	.10102397	.10758491	.11434494	.12129685	.12843317	.13574622	14
15	.09634229	.10296276	.10979462	.11682954	.12405888	.13147378	15
16	0.09226991	0.09895214	0.10585765	0.11297687	0.12029991	0.12781662	16
17	.08869914	.09544480	.10242519	.10962943	.11704625	.12466413	17
18	.08554622	.09235654	.09941260	.10670210	.11421229	.12193022	18
19	.08274501	.08962086	.09675302	.10412763	.11173041	.11954687	19
20	.08024259	.08718456	.09439293	.10185221	.10954648	.11745962	20
21	0.07799611	0.08500455	0.09228900	0.09983225	0.10761663	0.11562439	21
22	.07597051	.08304557	.09040577	.09803207	.10590499	.11400506	22
23	.07413683	.08127848	.08871393	.09642217	.10438188	.11257181	23
24	.07247090	.07967901	.08718902	.09497796	.10302256	.11129978	24
25	.07095246	.07822672	.08581052	.09367878	.10180625	.11016807	25
26	0.06956432	0.07690435	0.08456103	0.09250713	0.10071536	0.10915904	26
27	.06829186	.07569717	.08342573	.09144810	.09973491	.10825764	27
28	.06712253	.07459255	.08239193	.09048890	.09885205	.10745101	28
29	.06604551	.07357961	.08144865	.08961854	.09805572	.10672807	29
30	.06505144	.07264891	.08058640	.08882743	.09733635	.10607925	30
31	0.06413212	0.07179222	0.07979691	0.08810728	0.09668560	0.10549621	31
32	.06328042	.07100234	.07907292	.08745081	.09609619	.10497172	32
33	.06249004	.07027293	.07840807	.08685163	.09556173	.10449941	33
34	.06175549	.06959843	.07779674	.08630411	.09507660	.10407371	34
35	.06107171	.06897386	.07723396	.08580326	.09463584	.10368971	35
36	0.06043446	0.06839483	0.07671531	0.08534467	0.09423505	0.10334306	36
37	.05983979	.06785743	.07623685	.08492440	.09387033	.10302994	37
38	.05928423	.06735812	.07579505	.08453894	.09353820	.10274692	38
39	.05876462	.06689380	.07538676	.08418513	.09323555	.10249098	39
40	.05827816	.06646153	.07500914	.08386016	.09295961	.10225941	40
41	0.05782229	0.06605886	0.07465962	0.08356149	0.09270789	0.10204980	41
42	.05739471	.06568342	.07433591	.08328684	.09247814	.10185999	42
43	.05699333	.06533312	.07403590	.08303414	.09226837	.10168805	43
44	.05661625	.06500606	.07375769	.08280152	.09207675	.10153224	44
45	.05626173	.06470050	.07349957	.08258728	.09190165	.10139100	45
46	0.05592820	0.06441485	0.07325996	0.08238991	0.09174160	0.10126295	46
47	.05561421	.06414768	.07303744	.08220799	.09159525	.10114682	47
48	.05531843	.06389766	.07283070	.08204027	.09146139	.10104148	48
49	.05503965	.06366356	.07263853	.08188557	.09133893	.10094590	49
50	.05477674	.06344429	.07245985	.08174286	.09122687	.10085917	50

THE ANNUITY WHICH $1 WILL PURCHASE FOR ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
51	0.03145856	0.03490870	0.03853382	0.04232156	0.04625885	0.05033232	51
52	.03110909	.03457446	.03821718	.04202428	.04598212	.05007679	52
53	.03077392	.03425449	.03791471	.04174100	.04571915	.04983469	53
54	.03045226	.03394799	.03762558	.04147090	.04546910	.04960519	54
55	.03014337	.03365419	.03734907	.04121323	.04523124	.04938754	55
56	0.02984657	0.03337243	0.03708447	0.04096730	0.04500487	0.04918105	56
57	.02956120	.03310204	.03683114	.04073245	.04478932	.04898506	57
58	.02928667	.03284244	.03658848	.04050810	.04458401	.04879897	58
59	.02902243	.03259307	.03635593	.04029366	.04438836	.04862221	59
60	.02876797	.03235340	.03613296	.04008862	.04420185	.04845426	60
61	0.02852278	0.03212294	0.03591908	0.03989249	0.04402398	0.04829462	61
62	.02828643	.03190126	.03571385	.03970480	.04385430	.04814284	62
63	.02805848	.03168790	.03551682	.03952513	.04369237	.04799848	63
64	.02783855	.03148249	.03532760	.03935308	.04353780	.04786115	64
65	.02762624	.03128463	.03514581	.03918826	.04339019	.04773047	65
66	0.02742122	0.03109398	0.03497110	0.03903031	0.04324921	0.04760608	66
67	.02722316	.03091021	.03480313	.03887892	.04311451	.04748765	67
68	.02703173	.03073300	.03464159	.03873375	.04298578	.04737487	68
69	.02684665	.03056206	.03448618	.03859453	.04286272	.04726745	69
70	.02666765	.03039712	.03433663	.03846095	.04274506	.04716511	70
71	0.02649446	0.03023790	0.03419266	0.03833277	0.04263253	0.04706760	71
72	.02632683	.03008417	.03405404	.03820973	.04252489	.04697465	72
73	.02616454	.02993568	.03392053	.03809160	.04242190	.04688605	73
74	.02600736	.02979222	.03379191	.03797816	.04232334	.04680159	74
75	.02585508	.02965358	.03366796	.03786919	.04222900	.04672104	75
76	0.02570751	0.02951956	0.03354849	0.03776450	0.04213868	0.04664422	76
77	.02556447	.02938997	.03343331	.03766390	.04205221	.04657094	77
78	.02542576	.02926463	.03332224	.03756721	.04196939	.04650104	78
79	.02529123	.02914338	.03321510	.03747426	.04189007	.04643434	79
80	.02516071	.02902605	.03311175	.03738489	.04181408	.04637069	80
81	0.02503405	0.02891248	0.03301201	0.03729894	0.04174127	0.04630995	81
82	.02491110	.02880254	.03291576	.03721628	.04167150	.04625197	82
83	.02479173	.02869608	.03282284	.03713676	.04160463	.04619662	83
84	.02467581	.02859298	.03273313	.03706025	.04154054	.04614379	84
85	.02456321	.02849310	.03264650	.03698662	.04147909	.04609334	85
86	0.02445381	0.02839633	0.03256284	0.03691576	0.04142018	0.04604516	86
87	.02434750	.02830255	.03248202	.03684756	.04136370	.04599915	87
88	.02424416	.02821165	.03240393	.03678190	.04130953	.04595522	88
89	.02414370	.02812353	.03232848	.03671868	.04125758	.04591325	89
90	.02404602	.02803809	.03225556	.03665781	.04120775	.04587316	90
91	0.02395101	0.02795523	0.03218508	0.03659919	0.04115995	0.04583486	91
92	.02385859	.02787486	.03211695	.03654273	.04111410	.04579827	92
93	.02376868	.02779690	.03205107	.03648834	.04107010	.04576331	93
94	.02368118	.02772126	.03198737	.03643594	.04102789	.04572991	94
95	.02359602	.02764786	.03192577	.03638546	.04098738	.04569799	95
96	0.02351313	0.02757662	0.03186619	0.03633682	0.04094850	0.04566749	96
97	.02343242	.02750747	.03180856	.03628995	.04091119	.04563834	97
98	.02335383	.02744034	.03175281	.03624478	.04087538	.04561048	98
99	.02327730	.02737517	.03169886	.03620124	.04084100	.04558385	99
100	.02320274	.02731188	.03164667	.03615927	.04080800	.04555839	100
Perp.	0.02000000	0.02500000	0.03000000	0.03500000	0.04000000	0.04500000	Perp.

TABLE XXIV. 227

THE ANNUITY WHICH $1 WILL PURCHASE FOR ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
51	0.05452867	0.06323880	0.07229365	0.08161116	0.09112430	0.10078046	51
52	.05429449	.06304617	.07213901	.08148959	.09103041	.10070900	52
53	.05407334	.06286551	.07199509	.08137735	.09094443	.10064413	53
54	.05386438	.06269602	.07186110	.08127370	.09086570	.10058523	54
55	.05366686	.06253696	.07173633	.08117796	.09079359	.10053175	55
56	0.05348010	0.06238765	0.07162011	0.08108952	0.09072754	0.10048317	56
57	.05330343	.06224744	.07151183	.08100780	.09066702	.10043906	57
58	.05313626	.06211573	.07141093	.08093228	.09061157	.10039898	58
59	.05297802	.06199200	.07131689	.08086247	.09056076	.10036258	59
60	.05282818	.06187572	.07122923	.08079795	.09051419	.10032951	60
61	0.05268627	0.06176642	0.07114749	0.08073830	0.09047151	0.10029946	61
62	.05255183	.06166366	.07107127	.08068314	.09043240	.10027217	62
63	.05242442	.06156703	.07100019	.08063214	.09039654	.10024736	63
64	.05230365	.06147615	.07093388	.08058497	.09036366	.10022483	64
65	.05218915	.06139066	.07087203	.08054135	.09033352	.10020434	65
66	0.05208057	0.06131022	0.07081431	0.08050100	0.09030589	0.10018573	66
67	.05197757	.06123454	.07076046	.08046367	.09028056	.10016882	67
68	.05187986	.06116330	.07071021	.08042914	.09025732	.10015345	68
69	.05178715	.06109625	.07066330	.08039719	.09023602	.10013948	69
70	.05169915	.06103313	.07061953	.08036764	.09021649	.10012678	70
71	0.05161563	0.06097370	0.07057866	0.08034029	0.09019857	0.10011524	71
72	.05153633	.06091774	.07054051	.08031498	.09018214	.10010476	72
73	.05146103	.06086505	.07050490	.08029156	.09016708	.10009522	73
74	.05138953	.06081542	.07047164	.08026990	.09015326	.10008656	74
75	.05132161	.06076867	.07044060	.08024984	.09014058	.10007868	75
76	0.05125709	0.06072463	0.07041160	0.08023128	0.09012896	0.10007153	76
77	.05119580	.06068315	.07038453	.08021410	.09011831	.10006502	77
78	.05113757	.06064407	.07035924	.08019820	.09010852	.10005911	78
79	.05108222	.06060724	.07033563	.08018349	.09009955	.10005373	79
80	.05102963	.06057254	.07031357	.08016987	.09009132	.10004884	80
81	0.05097963	0.06053984	0.07029297	0.08015726	0.09008377	0.10004440	81
82	.05093211	.06050903	.07027373	.08014559	.09007685	.10004036	82
83	.05088694	.06047998	.07025576	.08013479	.09007050	.10003669	83
84	.05084399	.06045261	.07023897	.08012479	.09006467	.10003336	84
85	.05080316	.06042681	.07022329	.08011553	.09005933	.10003032	85
86	0.05076433	0.06040249	0.07020863	0.08010696	0.09005443	0.10002756	86
87	.05072740	.06037956	.07019495	.08009903	.09004993	.10002506	87
88	.05069228	.06035795	.07018216	.08009168	.09004581	.10002278	88
89	.05065888	.06033757	.07017021	.08008489	.09004202	.10002071	89
90	.05062711	.06031836	.07015905	.08007859	.09003855	.10001883	90
91	0.05059689	0.06030025	0.07014863	0.08007277	0.09003537	0.10001711	91
92	.05056815	.06028318	.07013888	.08006737	.09003245	.10001556	92
93	.05054080	.06026708	.07012978	.08006238	.09002977	.10001414	93
94	.05051478	.06025190	.07012128	.08005775	.09002731	.10001286	94
95	.05049003	.06023758	.07011333	.08005347	.09002505	.10001169	95
96	0.05046648	0.06022408	0.07010590	0.08004951	0.09002298	0.10001063	96
97	.05044407	.06021135	.07009897	.08004584	.09002109	.10000966	97
98	.05042274	.06019935	.07009248	.08004244	.09001934	.10000878	98
99	.05040245	.06018803	.07008643	.08003930	.09001775	.10000798	99
100	.05038314	.06017736	.07008076	.08003638	.09001628	.10000726	100
Perp.	0.05000000	0.06000000	0.07000000	0.08000000	0.09000000	0.10000000	Perp.

LOGARITHM OF THE PRESENT VALUE OF $1, DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0
1	$\bar{1}$.9913998	$\bar{1}$.9892761	$\bar{1}$.9871628	$\bar{1}$.9850597	$\bar{1}$.9829667	$\bar{1}$.9808837	1
2	.9827997	.9785523	.9743256	.9701193	.9659333	.9617674	2
3	.9741995	.9678284	.9614883	.9551790	.9489000	.9426511	3
4	.9655993	.9571045	.9486511	.9402386	.9318666	.9235348	4
5	$\bar{1}$.9569991	$\bar{1}$.9463807	$\bar{1}$.9358139	$\bar{1}$.9252983	$\bar{1}$.9148333	$\bar{1}$.9044185	5
6	.9483990	.9356568	.9229767	.9103579	.8978000	.8853023	6
7	.9397988	.9249329	.9101394	.8954176	.8807666	.8661860	7
8	.9311986	.9142091	.8973022	.8804772	.8637333	.8470697	8
9	.9225985	.9034852	.8844650	.8655369	.8466999	.8279534	9
10	$\bar{1}$.9139983	$\bar{1}$.8927613	$\bar{1}$.8716278	$\bar{1}$.8505965	$\bar{1}$.8296666	$\bar{1}$.8088371	10
11	.9053981	.8820375	.8587905	.8356562	.8126333	.7897208	11
12	.8967979	.8713136	.8459533	.8207158	.7955999	.7706045	12
13	.8881978	.8605897	.8331161	.8057755	.7785666	.7514882	13
14	.8795976	.8498659	.8202789	.7908351	.7615332	.7323719	14
15	$\bar{1}$.8709974	$\bar{1}$.8391420	$\bar{1}$.8074416	$\bar{1}$.7758948	$\bar{1}$.7444999	$\bar{1}$.7132556	15
16	.8623973	.8284182	.7946044	.7609544	.7274666	.6941394	16
17	.8537971	.8176943	.7817672	.7460141	.7104332	.6750231	17
18	.8451969	.8069704	.7689300	.7310737	.6933999	.6559068	18
19	.8365967	.7962466	.7560927	.7161334	.6763666	.6367905	19
20	$\bar{1}$.8279966	$\bar{1}$.7855227	$\bar{1}$.7432555	$\bar{1}$.7011930	$\bar{1}$.6593332	$\bar{1}$.6176742	20
21	.8193964	.7747988	.7304183	.6862527	.6422999	.5985579	21
22	.8107962	.7640750	.7175811	.6713123	.6252665	.5794416	22
23	.8021961	.7533511	.7047438	.6563720	.6082332	.5603253	23
24	.7935959	.7426272	.6919066	.6414316	.5911999	.5412090	24
25	$\bar{1}$.7849957	$\bar{1}$.7319034	$\bar{1}$.6790694	$\bar{1}$.6264913	$\bar{1}$.5741665	$\bar{1}$.5220927	25
26	.7763955	.7211795	.6662322	.6115509	.5571332	.5029764	26
27	.7677954	.7104556	.6533949	.5966106	.5400998	.4838602	27
28	.7591952	.6997318	.6405577	.5816702	.5230665	.4647439	28
29	.7505950	.6890079	.6277205	.5667299	.5060332	.4456276	29
30	$\bar{1}$.7419948	$\bar{1}$.6782840	$\bar{1}$.6148833	$\bar{1}$.5517895	$\bar{1}$.4889998	$\bar{1}$.4265113	30
31	.7333947	.6675602	.6020460	.5368492	.4719665	.4073950	31
32	.7247945	.6568363	.5892088	.5219088	.4549331	.3882787	32
33	.7161943	.6461124	.5763716	.5069685	.4378998	.3691624	33
34	.7075942	.6353886	.5635344	.4920281	.4208665	.3500461	34
35	$\bar{1}$.6989940	$\bar{1}$.6246647	$\bar{1}$.5506971	$\bar{1}$.4770878	$\bar{1}$.4038331	$\bar{1}$.3309298	35
36	.6903938	.6139409	.5378599	.4621474	.3867998	.3118135	36
37	.6817937	.6032170	.5250227	.4472071	.3697664	.2926973	37
38	.6731935	.5924931	.5121855	.4322667	.3527331	.2735810	38
39	.6645933	.5817692	.4993482	.4173264	.3356998	.2544647	39
40	$\bar{1}$.6559931	$\bar{1}$.5710454	$\bar{1}$.4865110	$\bar{1}$.4023860	$\bar{1}$.3186664	$\bar{1}$.2353484	40
41	.6473930	.5603215	.4736738	.3874457	.3016331	.2162321	41
42	.6387928	.5495977	.4608366	.3725053	.2845997	.1971158	42
43	.6301926	.5388738	.4479993	.3575650	.2675664	.1779995	43
44	.6215924	.5281499	.4351621	.3426246	.2505331	.1588832	44
45	$\bar{1}$.6129923	$\bar{1}$.5174261	$\bar{1}$.4223249	$\bar{1}$.3276843	$\bar{1}$.2334997	$\bar{1}$.1397669	45
46	.6043921	.5067022	.4094877	.3127439	.2164664	.1206506	46
47	.5957919	.4959783	.3966504	.2978036	.1994331	.1015343	47
48	.5871918	.4852545	.3838132	.2828632	.1823997	.0824181	48
49	.5785916	.4745306	.3709760	.2679229	.1653664	.0633018	49
0-9	$\bar{1}$.6129923	$\bar{1}$.5174260	$\bar{1}$.4223250	$\bar{1}$.3276845	$\bar{1}$.2334997	$\bar{1}$.1397669	0-9
10-19	2.7529751	2.4450395	2.1386025	3.8336495	3.5301658	3.2281379	10-19
20-29	3.8929580	3.3726530	4.8548800	4.3396145	5.8268319	5.3165088	20-29
30-39	3.0329408	4.3002664	5.5711575	6.8155795	6.1234979	7.4048798	30-39
40-49	4.1729236	5.2278800	6.2874350	7.3515445	8.4201640	9.4932507	40-49

FORMULA, Logarithm $= \lambda v^n$.

TABLE XXV.

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LOGARITHM OF THE PRESENT VALUE OF $1, DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
0	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0
1	1.9788107	1.9746941	1.9706162	1.9665762	1.9625735	1.9586073	1
2	.9576214	.9493883	.9412324	.9331525	.9251470	.9172146	2
3	.9364321	.9240824	.9118487	.8997287	.8877205	.8758219	3
4	.9152428	.8987765	.8824649	.8663050	.8502940	.8344293	4
5	1.8940535	1.8734707	1.8530811	1.8328812	1.8128675	1.7930366	5
6	.8728642	.8481648	.8236973	.7994575	.7754410	.7516439	6
7	.8516749	.8228589	.7943136	.7660337	.7380145	.7102512	7
8	.8304856	.7975531	.7649298	.7326100	.7005880	.6688585	8
9	.8092963	.7722472	.7355460	.6991862	.6631615	.6274658	9
10	1.7881070	1.7469413	1.7061622	1.6657624	1.6257350	1.5860731	10
11	.7669177	.7216355	.6767784	.6323387	.5883085	.5446805	11
12	.7457284	.6963296	.6473947	.5989149	.5508820	.5032878	12
13	.7245391	.6710238	.6180109	.5654912	.5134555	.4618951	13
14	.7033498	.6457179	.5886271	.5320674	.4760290	.4205024	14
15	1.6821605	1.6204120	1.5592433	1.4986437	1.4386025	1.3791097	15
16	.6609712	.5951062	.5298596	.4652199	.4011760	.3377170	16
17	.6397819	.5698003	.5004758	.4317962	.3637495	.2963244	17
18	.6185926	.5444944	.4710920	.3983724	.3263230	.2549317	18
19	.5974033	.5191886	.4417082	.3649486	.2888965	.2135390	19
20	1.5762140	1.4938827	1.4123244	1.3315249	1.2514700	1.1721463	20
21	.5550247	.4685768	.3829407	.2981011	.2140435	.1307536	21
22	.5338354	.4432710	.3535569	.2646774	.1766170	.0893609	22
23	.5126461	.4179651	.3241731	.2312536	.1391905	.0479682	23
24	.4914568	.3926592	.2947893	.1978299	.1017640	.0065756	24
25	1.4702675	1.3673534	1.2654056	1.1644061	1.0643376	2.9651829	25
26	.4490782	.3420475	.2360218	.1309824	.0269111	.9237902	26
27	.4278889	.3167416	.2066380	.0975586	2.9894846	.8823975	27
28	.4066996	.2914358	.1772542	.0641348	.9520581	.8410048	28
29	.3855103	.2661299	.1478704	.0307111	.9146316	.7996121	29
30	1.3643210	1.2408240	1.1184867	2.9972873	2.8772051	2.7582194	30
31	.3431317	.2155182	.0891029	.9638636	.8397786	.7168268	31
32	.3219424	.1902123	.0597191	.9304398	.8023521	.6754341	32
33	.3007531	.1649064	.0303353	.8970161	.7649256	.6340414	33
34	.2795638	.1396006	.0009516	.8635923	.7274991	.5926487	34
35	1.2583745	1.1142947	2.9715678	2.8301686	2.6900726	2.5512560	35
36	.2371852	.0889889	.9421840	.7967448	.6526461	.5098633	36
37	.2159959	.0636830	.9128002	.7633210	.6152196	.4684706	37
38	.1948066	.0383771	.8834164	.7298973	.5777931	.4270780	38
39	.1736173	.0130713	.8540327	.6964735	.5403666	.3856853	39
40	1.1524280	2.9877654	2.8246489	2.6630498	2.5029401	2.3442926	40
41	.1312387	.9624595	.7952651	.6296260	.4655136	.3028999	41
42	.1100494	.9371537	.7658813	.5962023	.4280871	.2615072	42
43	.0888601	.9118478	.7364976	.5627785	.3906606	.2201145	43
44	.0676708	.8865419	.7071138	.5293548	.3532341	.1787219	44
45	1.0464815	2.8612361	2.6777300	2.4959310	2.3158076	2.1373292	45
46	.0252922	.8359302	.6483462	.4625072	.2783811	.0959365	46
47	.0041029	.8106243	.6189624	.4290835	.2409546	.0545438	47
48	2.9829136	.7853184	.5895787	.3956597	.2035281	.0131511	48
49	.9617243	.7600126	.5601949	.3622360	.1661016	3.9717584	49
0- 9	1.0464815	2.8612360	2.6777300	2.4959310	2.3158075	2.1373291	0- 9
10-19	4.9275515	4.3306496	5.7393522	5.1535554	6.5731575	7.9980607	10-19
20-29	6.8086215	7.8000630	8.8009744	9.8111799	10.8305080	11.8587921	20-29
30-39	8.6896915	9.2694765	11.8625967	12.4688043	13.0878585	15.7195236	30-39
40-49	10.5707615	12.7388899	14.9242189	15.1264288	17.3452085	19.5802551	40-49

TABLE XXV.

LOGARITHM OF THE PRESENT VALUE OF $1, DUE AT THE END OF ANY NUMBER OF YEARS.

Years.	2 Per Cent.	2½ Per Cent.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	Years.
50	$\bar{1}$.5699914	$\bar{1}$.4638067	$\bar{1}$.3581388	$\bar{1}$.2529825	$\bar{1}$.1483330	$\bar{1}$.0441855	50
51	.5613912	.4530829	.3453015	.2380422	.1312997	.0250692	51
52	.5527911	.4423590	.3324643	.2231018	.1142664	.0059529	52
53	.5441909	.4316351	.3196271	.2081615	.0972330	$\bar{2}$.9868366	53
54	.5355907	.4209113	.3067899	.1932211	.0801997	.9677203	54
55	$\bar{1}$.5269906	$\bar{1}$.4101874	$\bar{1}$.2939526	$\bar{1}$.1782808	$\bar{1}$.0631663	$\bar{2}$.9486040	55
56	.5183904	.3994635	.2811154	.1633404	.0461330	.9294877	56
57	.5097902	.3887397	.2682782	.1484001	.0290997	.9103714	57
58	.5011900	.3780158	.2554410	.1334597	.0120663	.8912552	58
59	.4925899	.3672919	.2426037	.1185194	$\bar{2}$.9950330	.8721389	59
60	$\bar{1}$.4839897	$\bar{1}$.3565681	$\bar{1}$.2297665	$\bar{1}$.1035790	$\bar{2}$.9779996	$\bar{2}$.8530226	60
61	.4753895	.3458442	.2169293	.0886387	.9609663	.8339063	61
62	.4667894	.3351203	.2040921	.0736983	.9439330	.8147900	62
63	.4581892	.3243965	.1912548	.0587580	.9268996	.7956737	63
64	.4495890	.3136726	.1784176	.0438176	.9098663	.7765574	64
65	$\bar{1}$.4409888	$\bar{1}$.3029487	$\bar{1}$.1655804	$\bar{1}$.0288773	$\bar{2}$.8928329	$\bar{2}$.7574411	65
66	.4323887	.2922249	.1527432	.0139369	.8757996	.7383248	66
67	.4237885	.2815010	.1399059	$\bar{2}$.9989966	.8587663	.7192085	67
68	.4151883	.2707772	.1270687	.9840562	.8417329	.7000922	68
69	.4065881	.2600533	.1142315	.9691159	.8246996	.6809760	69
70	$\bar{1}$.3979880	$\bar{1}$.2493294	$\bar{1}$.1013943	$\bar{2}$.9541755	$\bar{2}$.8076662	$\bar{2}$.6618597	70
71	.3893878	.2386056	.0885570	.9392352	.7906329	.6427434	71
72	.3807876	.2278817	.0757198	.9242948	.7735996	.6236271	72
73	.3721875	.2171578	.0628826	.9093545	.7565662	.6045108	73
74	.3635873	.2064340	.0500454	.8944141	.7395329	.5853945	74
75	$\bar{1}$.3549871	$\bar{1}$.1957101	$\bar{1}$.0372081	$\bar{2}$.8794738	$\bar{2}$.7224996	$\bar{2}$.5662782	75
76	.3463869	.1849862	.0243709	.8645334	.7054662	.5471619	76
77	.3377868	.1742624	.0115337	.8495931	.6884329	.5280456	77
78	.3291866	.1635385	$\bar{2}$.9986965	.8346527	.6713995	.5089293	78
79	.3205864	.1528146	.9858592	.8197124	.6543662	.4898131	79
80	1.3119863	$\bar{1}$.1420908	$\bar{2}$.9730220	$\bar{2}$.8047720	$\bar{2}$.6373329	$\bar{2}$.4706968	80
81	.3033861	.1313669	.9601848	.7898317	.6202995	.4515805	81
82	.2947859	.1206430	.9473476	.7748913	.6032662	.4324642	82
83	.2861857	.1099192	.9345103	.7599510	.5862328	.4133479	83
84	.2775856	.0991953	.9216731	.7450106	.5691995	.3942316	84
85	$\bar{1}$.2689854	$\bar{1}$.0884714	$\bar{2}$.9088359	2.7300703	$\bar{2}$.5521662	$\bar{2}$.3751153	85
86	.2603852	.0777476	.8959987	.7151299	.5351328	.3559990	86
87	.2517851	.0670237	.8831615	.7001896	.5180995	.3368827	87
88	.2431849	.0562998	.8703242	.6852492	.5010661	.3177664	88
89	.2345847	.0455760	.8574870	.6703089	.4840328	.2986502	89
90	1.2259845	$\bar{1}$.0348521	$\bar{2}$.8446498	2.6553685	2.4669995	$\bar{2}$.2795339	90
91	.2173844	.0241282	.8318126	.6404282	.4499661	.2604176	91
92	.2087842	.0134044	.8189753	.6254878	.4329328	.2413013	92
93	.2001840	.0026805	.8061381	.6105475	.4158994	.2221850	93
94	.1915839	$\bar{2}$.9919567	.7933009	.5956071	.3988661	.2030687	94
95	$\bar{1}$.1829837	$\bar{2}$.9812328	$\bar{2}$.7804637	$\bar{2}$.5800668	$\bar{2}$.3818328	$\bar{2}$.1839524	95
96	.1743835	.9705089	.7676264	.5657264	.3647994	.1648361	96
97	.1657833	.9597851	.7547892	.5507861	.3477661	.1457198	97
98	.1571832	.9490612	.7419520	.5358457	.3307327	.1266035	98
99	.1485830	.9383373	.7291148	.5209054	.3136994	.1074872	99
100	.1399828	.9276135	.7162775	.5059650	.2966661	.0883710	100
50-59	5.3129064	$\bar{6}$.1554933	$\bar{7}$.0037125	$\bar{9}$.8575095	$\bar{10}$.7168301	$\bar{11}$.5816217	50-59
60-69	$\bar{6}$.4528892	$\bar{7}$.0831068	9.7199900	$\bar{10}$.3634745	$\bar{11}$.0134961	$\bar{13}$.6699926	60-69
70-79	7.5928720	$\bar{8}$.0107203	$\bar{10}$.4362675	$\bar{12}$.8694395	$\bar{13}$.3101622	$\bar{15}$.7583636	70-79
80-89	$\bar{8}$.7328549	$\bar{10}$.9383337	$\bar{11}$.1525451	$\bar{13}$.3754045	$\bar{15}$.6068283	$\bar{17}$.8467346	80-89
90-99	$\bar{9}$.8728377	$\bar{11}$.8659472	$\bar{13}$.8688228	$\bar{15}$.8813695	$\bar{17}$.9034943	$\bar{19}$.9351055	90-99

TABLE XXV.

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LOGARITHM OF THE PRESENT VALUE OF $1, DUE AT THE END OF ANY NUMBER
OF YEARS.

Years.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	9 Per Cent.	10 Per Cent.	Years.
50	$\overline{2}$.9405350	$\overline{2}$.7347067	$\overline{2}$.5308111	$\overline{2}$.3288122	$\overline{2}$.1286751	$\overline{3}$.9303657	50
51	.9193457	.7094009	.5014273	.2953885	.0912486	.8889731	51
52	.8981564	.6840950	.4720436	.2619647	.0538221	.8475804	52
53	.8769671	.6587891	.4426598	.2285410	.0163956	.8061877	53
54	.8557779	.6334833	.4132760	.1951172	$\overline{3}$.9789691	.7647950	54
55	$\overline{2}$.8345886	$\overline{2}$.6081774	$\overline{2}$.3838922	$\overline{2}$.1616934	$\overline{3}$.9415426	$\overline{3}$.7234023	55
56	.8133993	.5828715	.3545084	.1282697	.9041161	.6820096	56
57	.7922100	.5575657	.3251247	.0948459	.8666896	.6406169	57
58	.7710207	.5322598	.2957409	.0614222	.8292631	.5992243	58
59	.7498314	.5069539	.2663571	.0279984	.7918366	.5578316	59
60	$\overline{2}$.7286421	$\overline{2}$.4816481	$\overline{2}$.2369733	$\overline{3}$.9945747	$\overline{3}$.7544101	$\overline{3}$.5164389	60
61	.7074528	.4563422	.2075896	.9611509	.7169836	.4750462	61
62	.6862635	.4310364	.1782058	.9277272	.6795571	.4336535	62
63	.6650742	.4057305	.1488220	.8943034	.6421306	.3922608	63
64	.6438849	.3804246	.1194382	.8608796	.6047041	.3508681	64
65	$\overline{2}$.6226956	$\overline{2}$.3551188	$\overline{2}$.0900545	$\overline{3}$.8274559	$\overline{3}$.5672776	$\overline{3}$.3094755	65
66	.6015063	.3298129	.0606707	.7940321	.5298511	.2680828	66
67	.5803170	.3045070	.0312869	.7606084	.4924246	.2266901	67
68	.5591277	.2792012	.0019031	.7271846	.4549981	.1852974	68
69	.5379384	.2538953	$\overline{3}$.9725193	.6937609	.4175716	.1439047	69
70	$\overline{2}$.5167491	$\overline{2}$.2285894	$\overline{3}$.9431356	$\overline{3}$.6603371	$\overline{3}$.3801451	$\overline{3}$.1025120	70
71	.4955598	.2032836	.9137518	.6269134	.3427186	.0611194	71
72	.4743705	.1779777	.8843680	.5934896	.3052921	.0197267	72
73	.4531812	.1526718	.8549842	.5600658	.2678657	$\overline{4}$.9783340	73
74	.4319919	.1273660	.8256005	.5266421	.2304392	.9369413	74
75	$\overline{2}$.4108026	$\overline{2}$.1020601	$\overline{3}$.7962167	$\overline{3}$.4932183	$\overline{3}$.1930127	$\overline{4}$.8955486	75
76	.3896133	.0767542	.7668329	.4597946	.1555862	.8541559	76
77	.3684240	.0514484	.7374491	.4263708	.1181597	.8127632	77
78	.3472347	.0261425	.7080653	.3929471	.0807332	.7713706	78
79	.3260454	.0008366	.6786816	.3595233	.0433067	.7299779	79
80	$\overline{2}$.3048561	$\overline{3}$.9755308	$\overline{3}$.6492978	$\overline{3}$.3260996	$\overline{3}$.0058802	$\overline{4}$.6885852	80
81	.2836668	.9502249	.6199140	.2926758	$\overline{4}$.9684537	.6471925	81
82	.2624775	.9249190	.5905302	.2592521	.9310272	.6057998	82
83	.2412882	.8996132	.5611465	.2258283	.8936007	.5644071	83
84	.2200989	.8743073	.5317627	.1924045	.8561742	.5230144	84
85	$\overline{2}$.1989096	$\overline{3}$.8490015	$\overline{3}$.5023789	$\overline{3}$.1589808	$\overline{4}$.8187477	$\overline{4}$.4816218	85
86	.1777203	.8236956	.4729951	.1255570	.7813212	.4402291	86
87	.1565310	.7983897	.4436113	.0921333	.7438947	.3988364	87
88	.1353417	.7730839	.4142276	.0587095	.7064682	.3574437	88
89	.1141524	.7477780	.3848438	.0252858	.6690417	.3160510	89
90	$\overline{2}$.0929631	$\overline{3}$.7224721	$\overline{3}$.3554600	$\overline{4}$.9918620	$\overline{4}$.6316152	$\overline{4}$.2746583	90
91	.0717738	.6971663	.3260762	.9584383	.5941887	.2332657	91
92	.0505845	.6718604	.2966925	.9250145	.5567622	.1918730	92
93	.0293952	.6465545	.2673087	.8915907	.5193357	.1504803	93
94	.0082059	.6212487	.2379249	.8581670	.4819092	.1090876	94
95	$\overline{3}$.9870166	$\overline{3}$.5959428	$\overline{3}$.2085411	$\overline{4}$.8247432	$\overline{4}$.4444827	$\overline{4}$.0676949	95
96	.9658273	.5706369	.1791573	.7913195	.4070562	.0263022	96
97	.9446380	.5453311	.1497736	.7578957	.3696297	$\overline{5}$.9849095	97
98	.9234487	.5200252	.1203898	.7244720	.3322032	.9435169	98
99	.9022594	.4947193	.0910060	.6910482	.2947767	.9021242	99
100	.8810701	.4694135	.0616222	.6576245	.2573502	.8607315	100
50-59	$\overline{12}$.4518321	$\overline{14}$.2083033	$\overline{17}$.9858411	$\overline{19}$.7840532	$\overline{21}$.6025585	$\overline{23}$.4409866	50-59
60-69	$\overline{14}$.3329025	$\overline{17}$.6777170	$\overline{19}$.0474634	$\overline{22}$.4416777	$\overline{25}$.8599085	$\overline{27}$.3017180	60-69
70-79	$\overline{16}$.2139725	$\overline{19}$.1471303	$\overline{22}$.1090857	$\overline{25}$.0993021	$\overline{28}$.1172592	$\overline{31}$.1624496	70-79
80-89	$\overline{18}$.0950425	$\overline{22}$.6165439	$\overline{25}$.1707079	$\overline{29}$.7569267	$\overline{32}$.3746095	$\overline{35}$.0231810	80-89
90-99	$\overline{21}$.9761125	$\overline{24}$.0859573	$\overline{28}$.2323301	$\overline{32}$.4145511	$\overline{36}$.6319595	$\overline{40}$.8839126	90-99

PART SECOND.

LIFE ANNUITIES AND INSURANCES.

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THE science of Life Annuities and Insurances is founded upon the system of Probabilities, or chiefly that portion of the system, which treats of "mathematical expectation." Numerous plans and projects from other sources, have generally ended in failure. And while "mathematical expectation" is admitted to govern the determination of premiums and reserves, the same principles, confirmed by long experience in connection with "moral expectation," are essentially recognized in the management of current risks and investments.

SECTION I.

First Principles of Probability for Reference.

For future reference, let us briefly state some of the axioms or first principles of the system of Probabilities. These have been variously developed in the able treatises of Professor De Morgan, especially the Essay on Probabilities in Lardner's Cabinet Cyclopædia, Galloway's article, Probability in the Encyclopædia Britannica, also published separately, Demoivre in 1756, Lubbock, Lacroix, Laplace, Poisson and others. A simple apparatus will serve for the experimental trials and comparisons. And a record of the results will illustrate the irregularities of small numbers and the increasing regularity of *large numbers* of trials, as well as the probable limits of *fluctuation* from a mean result.

1. Definition. According to the usual definition, *the mathematical probability of a contingent event is measured by a fraction, whose numerator is the number of equal ways in which it can happen, and whose denominator is the number of all the equal ways in which it can either happen or fail.*

The different chances or ways of happening are supposed to be perfectly equal. Otherwise they must be multiplied by numbers proportional to their respective facilities or likelihoods. If one chance is twice as likely as another, it must be regarded as two chances; and so generally.

An urn contains, for example, nine white balls, and one black ball. The chance of drawing a white ball by a person blindfold, is consequently $\frac{9}{10}$; and that of the black ball $\frac{1}{10}$.

Thus the chance of throwing heads in the toss of a symmetrical coin, is $\frac{1}{2}$ or 0.5, called the "even chance." And the probability of throwing the ace point with an

ivory die, having six equal faces, is $\frac{1}{6}$.   Generally, if the chances of occurrence are to those of failure, as a to b, the probabilities of happening and of failing in the next trial will be, respectively,

$$\frac{a}{a+b}, \text{ and } \frac{b}{a+b}.$$

2. *Certainty.*   The sum of the last two fractions is evidently 1, the symbol of certainty; since one event or the other must take place.   The practical applications of this principle are sometimes called "hedging," or "compassing the main chance." Thus a person having effected a temporary insurance on his life for ten years for $5,000, next buys a pure endowment of $5,000 for the same period.   Or what is equivalent, he effects an Endowment Insurance for $5,000 for ten years.   The opposite chances of living and dying evidently make up a certainty, and are both secured ; so that he must receive $5,000 at the end of ten years, or sooner in the event of death.

3. *The Opposite Probability.*   If p denote the probability of happening, and q that of failing in the next trial; then as just stated, $p+q=1$, and $q=1-p$.   That is, *the probability p subtracted from unity, gives the probability of the opposite event.*

Thus the probability of throwing the ace point being $\frac{1}{6}$; the probability of *not* throwing the ace, but some other face of the die, is $1-\frac{1}{6}$, or $\frac{5}{6}$.

In the life table, let l denote the number of persons living at any given age; d the number dying in the ensuing twelve months; p the probability of surviving; and q that of dying, in the same year.   As before described,

$$q=\frac{d}{l}; \qquad p=1-q=\frac{l-d}{l}.$$

4. *Joint Occurrence.   The probability of an event compounded of any number of simple and independent events is equal to the product of their separate probabilities.*

It will be useful to observe that this product will be the same, whether the simple events are simultaneous or successive, or to occur in any one order.   For example, if p, p', p'' denote the tabular probabilities of surviving from the age of 35 to 36, 36 to 37, 37 to 38; the probability of surviving from 35 to 38 will be equal to the product $p\,p'\,p''$.   In like manner, the chance of surviving from 35 to 37, and dying in the next year, will be $p\,p'\,(1-p'')$.

Since the product of two or more proper fractions is always less than either factor, the uncertainty of a compound event increases with every new contingency, on which it is made to depend.   For a common illustration, the evidence of eye-witnesses is preferred to hearsay reports successively transmitted.

5. *Addition of Probabilities.   When a simple event may happen in several ways independently, the probability of the event is the sum of its separate probabilities.* Thus, the chance of throwing the ace point in one toss of an ivory die, being $\frac{1}{6}$, the chance of throwing just one ace when two dice are thrown, is the sum of $\frac{5}{6}\times\frac{1}{6}+\frac{1}{6}\times\frac{5}{6}$ or $\frac{10}{36}$.   In the same case, for contrast, the chance of two aces by Principle 4, is equal to $\frac{1}{6}\times\frac{1}{6}$ or $\frac{1}{36}$.   The wide difference between these two classes of results, was strikingly illustrated in the military concentrations and combinations of Napoleon Bonaparte.   "Military science," said he, "consists in calculating all the chances accurately in the first place, and then in giving accident its place in one's calculations."

6. *Repetition of Trials.*   An urn contains 3 white and 2 black balls or 5 in all. A ball is drawn successively and replaced in the urn after each drawing.   The result

of two trials,—if W, B, denote the issue of a white or black ball respectively,—will be represented thus :

Possible Events.	WW,	WB,	BW,	BB.
Probabilities.	$\frac{3}{5} \times \frac{3}{5}$,	$\frac{3}{5} \times \frac{2}{5}$,	$\frac{2}{5} \times \frac{3}{5}$,	$\frac{2}{5} \times \frac{2}{5}$.
$(p+q)^2$ =	p^2 +	pq +	qp +	q^2.

And so generally, if p denote the probability of any contingent event E, and q that of its opposite, so that $p+q=1$; the possible combinations in m trials, will be represented by the terms of the development of the binomial,

$$(p+q)^m = p^m + mp^{m-1}q + \frac{m(m-1)}{2}p^{m-2}q^2 + \ldots.$$

$$+ \frac{m(m-1)(m-2)\ldots.(m-n+1)}{1.2.3 \qquad \ldots. \qquad n}p^{m-n}q^n + \ldots. + q^m.$$

The first term expresses the probability that E will happen in every one of the m trials. The whole second term expresses the probability that E will happen $m-1$ times and fail once, in any order or *without regard to order.* Or omitting its coefficient m, the remaining product by Principle 4, expresses the probability that E will occur $m-1$ times and fail once *in any particular* or assigned order. And so on for the third term, to the last.

In like manner, instead of two simple events, had there been three, whose probabilities are p, q, r, so that $p+q+r=1$; the probabilities in m trials would be shown in the development of $(p+q+r)^m$. And so, for any greater number of events.

The terms of the development of $(p+q)^m$ can be represented by the ordinates of a curve, termed the *probability curve.* And the maximum term is proved to be that which has mp and mq, or numbers nearest to these, for the exponents of the factors p and q respectively. So in the case of three or more simple events, whose probabilities are p, q, r .... the most probable combination in m trials is the maximum term of $(p+q+r+\ldots.)^m$, or

$$\frac{1.2.3.4\ldots\ldots m}{1.2\ldots.mp \times 1.2\ldots.mq \times 1.2\ldots.mr \times \ldots.} \times p^{mp} \times q^{mq} \times r^{mr} \times \ldots.$$

The probability curve, here described, when materially simplified for large numbers, has been made the foundation of the "theory of errors of observations." Also its mean area has been tabulated for reference, by De Morgan and others.

7. *Mathematical Expectation.* The *mathematical expectation of a contingent gain, is the product of the sum at issue, by the probability of receiving it.* Or, the sum of the expectations of gain, diminished by the sum of the expectations of loss, gives the total expectation. If the chance of winning \$90 is $\frac{1}{6}$, the expectation is $90 \times \frac{1}{6}$, or \$15.

In the original application to games of hazard, *the conditions of equal play not only required the mathematical expectations to be equal*, but also required *the option of continuing the game through a given series of trials.* If p denotes the chance that A will win the sum a from B, and q denotes the chance that B will win the sum b from A, at each trial, then the first condition of equality requires that $pa=qb$; or $a:b::q:p$. That is, if the number of trials is not limited, the stakes must be inversely proportional to the probabilities of winning in each single trial.

In the historic problem proposed to Pascal : Two persons of equal skill (that is, $p=q=\frac{1}{2}$) sit down to play on condition that the one who first gains three games shall win the stakes. The first has gained two games, and the second one game, when

they agree to separate. What share is each entitled to take? Not equal shares ; but the stakes must be divided proportionally to the probabilities of winning the unfinished games.

By Principle 4, the probability of the second player's winning the next two games is $\frac{1}{4}$. By Principle 5, the probability of the first player's winning the next game is $\frac{1}{2}$; that of losing this game and winning the second, $\frac{1}{4}$, total $\frac{3}{4}$. So that the share of the second is $\frac{1}{4}$; and of the first, $\frac{3}{4}$; being proportional to their respective chances of finally winning the stakes.

At the present day, these early problems are still valuable as miniature illustrations of the correct principles, which govern in questions of Insurance reserves and the distribution of surplus. The danger in practice, generally lies, as was illustrated by Demoivre, in ignoring just distinctions and liabilities, such as the effect of unexpired times and conditions.

8. Moral Expectation. In the solution of problems relating to games of chance, it was noted at an early period, that in many cases, the numeric expectation was an insufficient guide, and other circumstances must be taken into account. Among these various conditions, the amount of capital of the party interested, was generally the most important. In the great majority of cases, the relation between the capital and the risk, proposed by Daniel Bernoulli, has led to very satisfactory conclusions. This principle more plainly stated, is, that when the absolute value of the capital increases in geometrical progression, its relative advantages, termed the moral value, increase not so fast, but in arithmetical progression. Or the relation in the first case, is that of numbers, and in the second case, that of their logarithms.

FORMULA.—Let a denote the original capital. Let e denote the mathematical, and e' the moral expectation of the contingent gains h, k, l, ... of which, the respective probabilities are p, q, r, ... It is assumed that $p + q + r + ... = 1$, so that one or other of the events will certainly happen. By Principle 7, we have

$$e = ph + qk + rl + \ldots.$$

To this, adding the identical equation $a = (p + q + r + ...)a$, we obtain under another form, the capital and mathematical expectation

$$a + e = p(a + h) + q(a + k) + r(a + l) + \ldots.$$

Changing from absolute to moral values, or from amounts to their logarithms, as above described, and from e to e', we thus define the *moral expectation :*

$$\log(a + e') = p \log(a + h) + q \log(a + k) + r \log(a + l) + \ldots.$$

Or passing from logarithms to numbers,

$$a + e' = (a + h)^p . (a + k)^q . (a + l)^r \ldots.$$

Since $a + h = a\left(1 + \dfrac{h}{a}\right)$, and $p + q + r + \ \ldots = 1$, we find by developing either of the last equations in series,

$$e' = ph + qk + rl + \ldots. - \tfrac{1}{2}(ph^2 + qk^2 + rl^2 + \ldots.) + \ldots.$$

The sum of the first powers in this series is identical with e as stated above ; so that the moral expectation in general, is less than the mathematical.

When the moral expectation is thus expressed by an Algebraic formula, the chief advantage appears in the facility with which the parts can be varied to bring up the value of the expectation to its maximum. Thus from the last formula of the Note above, it appears that when the risks of an Insurance Office are so numerously distributed, and each one is so small in comparison with the capital, that the higher powers h^2, k^2, ... may be neglected in comparison with the first, the moral expectation attains its maximum, and the most favorable disposition of the chances is so far realized.

The general precept known in commerce under the name of Distribution of Risk, immediately follows, in connection with that of the selection or rejection of risks.

From the problems relating to games of chance, the moral expectation appears to be always less than the mathematical. Hence the obvious consequence that betting, gambling and lotteries are attended with moral disadvantage, even when the chances of gain or loss are perfectly equal. As Prof. De Morgan has remarked, " it does not follow, that equal play means prudent play."

Among other illustrative problems of this theory, is one for determining the amount of capital which an individual should possess in order to be *morally* indifferent whether he insures or not. When the amount of capital is below this limit, its moral value may be advanced by insurance, even when the premium exceeds the mathematical value of the risk.

SECTION II.

The Life Table and Law of Mortality.

An important application of the system of Probability to give increased accuracy to the ratios of mortality or loss, by final series, has already been described on pages 35–38. By this method, the annual ratios by Lives and by Amounts, for Male and for Female Life were severally computed from the experience of the Thirty Offices. According to Principle 3 of Probability, the ratios of loss or of mortality, denoted by q, when subtracted from unity give $1-q$ or p, the annual probability of surviving one year. Let $p, p', p'' \ldots$ denote the tabular probabilities, thus found from the Amounts, of surviving from the age of 10 to 11, 11 to 12, 12 to 13, and so on. Then assuming 100,000 to enter at the precise age of ten years, by Principle 4 of the last Section, the numbers surviving at the ages 10, 11, 12, 13, ... will be 100,000, 100,000 p, 100,000 $p\,p'$, 100,000 $p\,p'\,p''$, and so on to the oldest age, near 100 years. The results are based on the fourth columns, pp. 159, 164. The standard Tables XXVI and LXXVII were thus constructed from the ratios of Amounts with slight adjustment in a few instances toward the extremes, from the ratios of Lives. The graduation of the table for Female Life, on account of small numbers above the age of seventy, was aided by comparison with other larger collections, and then adjusted by the method of Woolhouse as described in the *Journal of the Institute of Actuaries*, Vol. 21, p. 45.

In the Table XXVI for Male Life, the values from age ten to ninety years, were calculated by the well-known law of Makeham, taking the ungraduated values of $l_{25}, l_{40}, l_{55}, l_{70}$, as data. The unknown q is found first, by taking the differences of the four equations once and again ; and then dividing the last two equations, one by the other. The formulas and constants are as follows :

$$l_x = k.s^x.g^{q^x}, \qquad \lambda l_x = \lambda k + x\lambda s + q^x.\lambda g.$$

$$\lambda\frac{l_{x+1}}{l_x} = \lambda p_x = \lambda s + q^x(q-1)\lambda g. \qquad \lambda k = 5.028244, \qquad \lambda(-\lambda g) = 4.475241.$$

$$s = 0.9936957, \qquad g = 0.9993122, \qquad q = 1.099713375.$$

$$\lambda s = \overline{1}.99725340, \qquad \lambda g = -0.000298773, \qquad \lambda q = 0.041279507.$$

$$\text{Nap. log. } s = -0.00632429, \qquad \text{Nap. log. } g = -0.000687950,$$
$$\text{Nap. log. } q = 0.095050036.$$

The integer results computed from this formula, terminated with only 2 persons living at the age of 101 years; and their close agreement with the ungraduated values secured their entire adoption, with a slight change above the age 90, so that the Table ends at the age of 99 years.

Here the inquiry arises, why should this Table of Male Life from the experience of Thirty Offices, spontaneously conform to Makeham's law of mortality, while previous Tables showed very considerable deviations? In explanation, the following circumstances may be noted; first, that the observations were far more numerous than any previous collection of life insurance statistics, and comprised nearly a million of entrants. Second, that the observations were nearly homogeneous, in respect to the agencies, medical examinations, climate, nationality, education, and habits of living. Third, that the observations were reduced with the greatest care by select clerks, and the results always verified by two independent operations. Fourth, that they contain the first application of the improvement in construction by final series, already mentioned. Fifth, that the observations are essentially free from the mis-statement of ages adjacent to 30, 35, 40, 45, 50, ... years, a common source of error in population returns.

The present collection also determines the fluctuating nature of climacterics, or periods of health and sickness, at the different ages of life. Physicians assert the existence of periodic alternations, more or less regular, of health and disease, observed in their own persons, and in their professional practice. It is like the surface of a body of water, disturbed by the wind or other causes, and taking the form of waves, having like periods of oscillation. And as the force of gravitation by insensible degrees, causes the waves gradually to subside, so does the innate vital force tend, from conditions of disease, to the original conditions of health. Detached portions of the present statistics, will show these fluctuations; an increase of mortality at one age, being followed by a decrease at a future age, and conversely. The manifestations prove to be so different in particular individuals, that in the average of several hundred thousands, the opposite fluctuations compensate each other, leaving in adult life, only the mathematical law before stated.

Down to the present time, the statistics of life tables have been regarded in practice merely as observations, with irregularities to be smoothed down and graduated like any other set of observations.

For a particular account of the earlier life tables, reference can be made to the original publications, or to *Walford's Cyclopædia*, or to the *Journal of the Institute of Actuaries*. In respect to the mathematical law of mortality, the celebrated Demoivre first observed that the portion of the life table between the ages of 22 and 86 years, was approximately represented by the simple formula, $l = 86 - x$; where l denotes the number living at the age x. This appeared in the year 1727. Different formulas were subsequently prepared or published by Lambert in 1776; by Babbage in 1823; by Thomas Young in 1826; by Littrow in 1832; by Moser in 1839; and by Orchard before 1856. But the chief interest centers, upon the formula of Gompertz, published in the Philosophical Transactions of 1825; and upon Makeham's modification of it, which appeared in 1859 in the *Assurance Magazine* or *Journal*, Vol. 8, p. 301.

Gompertz's formula is $l_x = k_1 . g_1^{q_1^x}$; Makeham's, $l_x = k . g^{q^x} . s^x$.

Here l denotes the number living at the age x, and k, g, q, s are constants to be derived from the observations. Now with reference to the usual expression of force

in the science of Mechanics, taking the Napierian logarithms of either formula, and differentiating twice, we find *the relative Force of Mortality*

$$= \frac{d^2 \log . l_x}{d.c^2} = \log . g . (\log . q)^2 . q^x.$$

That is, in the average of a great number of adult males, the relative force of mortality, increases regularly with advancing age, *in geometrical progression.*

But the chief value of this law, like that of the law of gravitation, is found in its relations to analysis. Integrating the last formula, we obtain by adding the usual constant, *the Instantaneous Rate of Mortality*, computed in Table XLIII:

$$\mu_x = -\frac{d \log . l_x}{dx} = -\log . s - \log . g . \log . q . q^x.$$

$$\mu_x = -\frac{d l_x}{l_x dx} = 1.187752 \times \lambda \frac{1}{p_{x-1}} + 1.114833 \times \lambda \frac{1}{p_x}.$$

$$\mu_x = \frac{8(l_{x-1} - l_{x+1}) - (l_{x-2} - l_{x+2})}{12 l_x}, \text{ nearly.}$$

When the quantities are determined from four fixed ages, as 25, 40, 55, 70 years, the common Log. q is found to have almost the same value 0.04 in all collections. But the constant s changes from one table or latitude to another, and representing the uniform influence of exterior causes, may be named the *climatic constant*. Also in certain cases, s may be used to represent an auxiliary or relative rate of interest.

Having found the law, *par excellence*, of adult mortality, above the age of 22 years, we have extended the same law, in Table XXVI, down to the age of ten, to represent the very few and exceptional insurances contracted at the youthful ages. With more complete statistics, like the results of the census, we might extend the same law down to the birthday, and compare with the ungraduated values, to indicate the residual series or law in infancy and youth.

A numerical example of this kind was given by the writer in the thirteenth Report of the Insurance Commissioner of Massachusetts, for the year 1868, page 106. Aided by this and some further data, Mr. Makeham happily completed his formula down to the birthday, as described in the *Journal of the Institute* for 1871, Vol. 16, page 344. Thus, *for the entire period of Male Life*, the number living l in the life table, at any age x is

$$l_x = k . g^{q^x} . s^x - k_1 . g_1^{q^x} . s_1^x + k_2 . g_2^{q^x} . s_2^x.$$

Since the middle term vanishes about the age of 20, and the last term vanishes at the age of 7 or 8; the first term, or rather the constants k, g, q, s are computed from ages above 20, as previously described on page 237. The value of q remaining the same, the maximum residual at age 6 or 7, and the residuals at 3 and 6 years older, define k_1, g_1, s_1. And the final or second residuals, at ages 0, 1, 2, determine k_2, g_2, s_2.

In seeking for the physical cause or causes, the analogy of " latent and sensible heat " is first suggested, in a general way. For in children, the sensible part of the bodily temperature is stated to slowly decline from birth until about the sixth year of age. After this, it gradually increases until maturity, and then slightly declines again, as old age advances.

Let us further observe that when complete life tables have been referred to three or four exponentials, as computed by the writer, one of the exponentials always corresponds with that of Makeham's formula in adult life, while the rest take the form of

exponential waves, such as $bc^x \cdot \cos.(ax+a')$. But in adult life, considered separately, these waves are so discordant, dissimilar and evanescent in different Tables, that they must disappear in the average of a very great number, as already shown numerically by the present statistics.

SECTION III.

Present Value of Life Annuities.

The early history of Annuities on Lives is given in the various memoirs of the *Assurance Magazine*, and in Walford's *Insurance Cyclopædia*, art. Annuities on Lives. Like some occasional applications in modern times, the earliest dealings rested on mere conjectural estimates. The growth of a correct system is associated with the early Table of the Prefect Ulpian, the unpublished State papers of Johan de Wit in 1671, the papers of Dr. Halley in the Philosophical Transactions of 1693, and with the noted formula of derivation,

$$a_x = vp_x(1+a_{x+1}),$$

published by Demoivre in 1725, and independently by Euler in 1760. The system of Commutation Columns was next perfected; and in 1849 Mr. Peter Gray in his admirable *Tables and Formulæ*, gave new derivative formulas, and improved the form of Gauss's Tables for finding Log.$(1+x)$ and Log.$(1-x)$ from the argument Log. x. The computation of Tables of temporary annuities in the present work, for example, was especially facilitated by Gray's Tables. For the calculation of a large class of applied results, the process by temporary annuities or their logarithms, is found to be considerably shorter than by commutation columns.

Further improvements relative to Annuities on Joint Lives and Survivorships have been successively derived from the formulas of Gompertz and Makeham. Also "the theory of continuous annuities" has been successfully introduced by Mr. Woolhouse in connection with Euler's formula of summation or quadrature, as described hereafter. A parallel method by Mr. Makeham, for determining all values of Life Annuities by integration, has been given under an improved form by Mr. Emory McClintock. The equivalent formula or series will be found on page 293.

In order to explain how Life Annuity Tables are calculated, let us compare the *Present Values* year by year, as follows:

Years,   1   2   3   .... n....

Annuity Certain, Value $= \quad v \quad + \quad v^2 \quad + \quad v^3 + \quad .... + \quad v^n + \cdots$

Life Annuity, $\qquad a_x = \dfrac{l_{x+1}}{l_x} \cdot v + \dfrac{l_{x+2}}{l_x} \cdot v^2 + \dfrac{l_{x+3}}{l_x} \cdot v^3 + \cdots + \dfrac{l_{x+n}}{l_x} \cdot v^n + \cdots$

Here v, v^2, v^3, etc. represent the present value of \$1 due at the end of the 1st year, of \$1 due at the end of the 2d year, of \$1 due at the end of the 3d year; and so on to the last. If i denotes the rate of interest, $v = \dfrac{1}{1+i}$.

In the lower formula, $\dfrac{l_{x+1}}{l_x}$ is the proportion by the life table, or probability of surviving the 1st year to receive \$1 whose present value is v; hence by Principle 7, Sect. I, the product $\dfrac{l_{x+1}}{l_x} \cdot v$ is the mathematical Expectation relative to the 1st year.

Again, $\dfrac{l_{x+2}}{l_x}$ is the probability of surviving the first two years to receive the next payment of \$1, whose present value is v^2. Hence the product $\dfrac{l_{x+2}}{l_x} \cdot v^2$ is the mathematical Expectation relative to the 2d year; and so on. The sum of these yearly Expectations is the present Value of the Life Annuity, Table XXVIII.

When the series extends over but 5, 7, 10 or n years, the sum is called a *Temporary Life Annuity*, or *Temporary Annuity*, denoted by $a_x{}^n$, to continue n years if the annuitant shall so long live. When the series extends to the end of the life table, near 100 years, the sum is termed a *Life Annuity*, denoted by a_x. "With present payment," the expression is $1 + a_x$, given by logarithms in Tables XLIV–XLVII.

From another point of view, let us suppose l_{30} persons of the common age 30 to buy each a Life Annuity of \$1. By the life table l_{31} survive to the age 31 to receive each the first payment of \$1, of which the present value is v, and total present value, $l_{31} \cdot v$. In like manner l_{32} will, on the average, survive to the end of the second year, when the present value of the second disbursements will be $l_{32} \cdot v^2$; and so on. Dividing the sum of all the present values by the original number of persons l_{30}, to find the average, a_x, we obtain the same formula as before,

$$a_{30} = \frac{l_{31} \cdot v + l_{32} \cdot v^2 + l_{33} \cdot v^3 + \cdots}{l_{30}}.$$

Recurring to the general formula, let us observe that on multiplying and dividing by l_{x+1}, which does not alter the value,

$$\frac{l_{x+2}}{l_x} = \frac{l_{x+1}}{l_x} \cdot \frac{l_{x+2}}{l_{x+1}} = p_x \cdot p_{x+1}; \qquad \frac{l_{x+3}}{l_x} = \frac{l_{x+1}}{l_x} \cdot \frac{l_{x+2}}{l_{x+1}} \cdot \frac{l_{x+3}}{l_{x+2}} = p_x \cdot p_{x+1} \cdot p_{x+2}; \cdots$$

Hence when the annuity is expressed in annual probabilities,

$$a_x = v \cdot p_x + v^2 \cdot p_x \cdot p_{x+1} + v^3 \cdot p_x \cdot p_{x+1} \cdot p_{x+2} + \cdots.$$

Deferred Annuity. Let the present value of \$1 annuity deferred m years on a life now aged x, be denoted by ${}^m a_x$. At the advanced age $x + m$, the value of a life annuity will be a_{x+m}. Multiplying this by v^m to reduce it to present value, and by $\dfrac{l_{x+m}}{l_x}$, the probability of attaining it, we have the value of the deferred annuity,

$${}^m a_x = \frac{l_{x+m}}{l_x} \cdot v^m \cdot a_{x+m}.$$

By examination, it will be seen that the sum of the temporary and the deferred annuity is equal to the whole life annuity; that is,

$$a_x{}^m + {}^m a_x = a_x; \qquad a_x{}^m = a_x - {}^m a_x.$$

Joint Lives. The probability that two lives aged x and y, shall both survive one year, is $\dfrac{l_{x+1} \cdot l_{y+1}}{l_x \cdot l_y}$, being the product of their separate probabilities. Hence by the same reasoning as for single lives, the present value of \$1 annuity payable at the end of each year, during the joint continuance of both lives, is as follows:

$$a_{xy} = \frac{l_{x+1} \cdot l_{y+1} \cdot v + l_{x+2} \cdot l_{y+2} \cdot v^2 + l_{x+3} \cdot l_{y+3} \cdot v^3 + \cdots}{l_x \cdot l_y}$$

For three or more joint lives, the formula depends on the same simple principle.

Annuity on Three Lives by Simpson's Rule. From Tables for one and two lives, the annuity for three lives was approximately determined by the author T. Simpson in 1791, as follows: " Take the value of an annuity on the joint lives of the two oldest, and find the age of a single life of the same value. Then find the annuity on the joint lives of the one just found, and the remaining life of the three, and the result, (which Francis Baily diminished by .05), will be very nearly the true value." Table, page 260.

Professor De Morgan proved that Simpson's method would be strictly true, if the Table followed the law of mortality of Gompertz. (*Journal*, Vol. 10, p. 27.)

Half-yearly and Quarterly Annuities. When the annuity is changed from annual to half-yearly installments, add .25 ; and when to quarterly installments, add .375 to the tabular value of the annuity. Or generally add $\frac{m-1}{2m}$, when the installment is payable m times a year, as demonstrated on page 70. Thus the value \$14.662 of \$1 annual payment is changed to 14.912 for half-yearly installments of \$0.50, and to 51.037 for quarterly installments of \$0.25. The more exact formula by Woolhouse for the value of an annuity payable m times a year is (*Journal*, Vol. 11, p. 327),

$$a_x + \frac{m-1}{2m} - \frac{m^2-1}{12m^2}(\mu+\delta).$$

And Mr. Sprague's formula for the value of a complete annuity, payable by m equal installments in each year, with a proportionate part to the day of death is (*Journal*, Vol. 13, pp. 377–380),

$$\left(a_x + \tfrac{1}{2} - \frac{\mu+\delta}{12}\right)\left(1 - \frac{\delta}{2m}\right) + \frac{\delta}{12m^2}.$$

Here $\mu = -\frac{d}{dx} \log. l_x = (l_{x-1} - l_{x+1}) \div 2l_x$ nearly ; $\delta =$ Nap. log. $(1+i)$, and $i =$ rate of interest. The values of μ, δ are given in Table XLIII.

From the present value for 1, the value for any other sum is found by multiplying the value for 1, by the actual annuity or yearly income. The further consideration of Life Annuities is deferred till after the system of Commutation Columns described in Section V.

SECTION IV.

Expectation of Life and Probable Life.

The phrase *Expectation of Life* has long been used to denote the after-life-time, or average number of years and the decimal part, lived after a given age.

Let l_x denote the number living shown in the life table at the age x. Assuming the deaths of each separate year to occur uniformly, the number of years lived in the first year, second year, third year, ... will be

$$\frac{l_x + l_{x+1}}{2} + \frac{l_{x+1} + l_{x+2}}{2} + \frac{l_{x+2} + l_{x+3}}{2} + \dots.$$

Taking the sum of the contiguous terms continued to the oldest age or end of the life table, and then dividing by l_x to give the average, we obtain the common formula for the *expectation of life,* denoted by e :

$$e_x = \tfrac{1}{2} + \frac{l_{x+1} + l_{x+2} + l_{x+3} + \dots}{l_x}.$$

Hence the Rule: Divide the sum of the tabular numbers living above the given age, by the number living at the age, and to the quotient add $\frac{1}{2}$ year.

For example, the expectation of life at the age 95 by Table XXVI is found to be

$$e_{95} = \frac{1}{2} + \frac{68+30+12+4}{136} = 1.338 \text{ or } 1\frac{1}{3} \text{ years, nearly.}$$

To demonstrate the derivative formula, let $x+1$ be substituted in place of x in the formula above; then clearing of fractions, and subtracting one equation from the other, we find

$$e_{x+1} = \frac{1}{2} + \frac{l_{x+2}+l_{x+3}+l_{x+4}+\dots}{l_{x+1}}$$

$$e_x - \frac{1}{2} = \frac{l_{x+1}}{l_x}\left(e_{x+1}+\frac{1}{2}\right) = p_x\left(e_{x+1}+\frac{1}{2}\right).$$

In the formulas of Section III for Life Annuities, if we make $v = 1$, that is, $\iota = 0$; we obtain what is termed "the *curtate* expectation of life." In the case of single lives, it is the quantity here denoted by $e_x - \frac{1}{2}$, and expresses *the average number of complete years* to be lived, or of annuities received, or of annual premiums to be finally paid.

Again making $v = 1$ in the formula for Joint Life Annuities, we obtain the *curtate* expectation of the joint life, denoted by $e_{xy}-\frac{1}{2}$; where the *complete* expectation is denoted by e_{xy}. According to "the continuous theory," the tabular expectations usually given, slightly exceed the true values, by one-twelfth of μ_x.

For comparing the longevity of different Life Tables, let the particular expectation of life which is just equal to the age past, be termed *the even expectation*. By the Thirty Offices Table XXVI, at the age 33.37 years, for example, the even expectation or mean duration of future life is also 33.37 years. In like manner, *the even expectation* of the Carlisle Table is 32.62 years; of the table of Des Parcieux 32.49; of the Equitable Society by Davies 32.38; of the British government Male Annuitants 32.00; of the Female Annuitants 34.58; and of the Northampton Table by Dr. Price 28.86 years. The shorter the even expectation or half-interval, the shorter will be the whole and other connected intervals of life in the same Table, as shown in Tables XXVI and LXXX.

A prevalent error on the part of persons imperfectly versed in these matters, consists in calculating life annuities and other similar results, from the expectation of life. At the age of 29 years, for example, the true present value of a life annuity by the Carlisle Table at 4 per cent. is 16.997; as found empirically from the expectation of life, it is 18.665, which is too great by one-tenth part. The nature of this erroneous practice may be further explained by comparison of the preceding formulas for life annuities and for expectations, which are evidently designed for separate objects.

Probable Life. At any given age, "the probable life" or "*vie probable*" denotes the future period, which there is the chance $\frac{1}{2}$ of surviving, and the chance $\frac{1}{2}$ of not surviving; these chances being equal. Let x and $x+T$ denote any two ages of the life table, connected by the relation, $\frac{1}{2}l_x = l_{x+T}$; then will the difference of ages T denote the probable life at the age x. The column of Probable Life in Table XXVI was computed by the preceding formula. In this Table at the age of thirty, for example, the probable life is 38.48 years, which is 2.63 years more than the expectation of life at that age. But at the age of $57\frac{3}{5}$, the expectation and the probable life become equal to each other in the common period of 16.61 years; and at older ages, the expectation exceeds the probable life.

A remarkable agreement of the probable life of males and females combined, was observed by the distinguished Professor Quetelet, in comparing the tables for England by Farr, Sweden by Berg, Belgium by Quetelet, Netherlands by Baumhauer, and Bavaria by Hermann. All Europe, he observes, as will be seen by the following columns, follows a law of mortality nearly the same; and the slight differences between the results above five years of age, appear due to particular advantages arising from opulence, and a more regular mode of life. (*Physique Sociale*, 1869, Vol. 1, page 307.)

YEARS OF PROBABLE LIFE IN EUROPE.

AGES.	SWEDEN.	ENGLAND.	BELGIUM.	NETHERLANDS.	BAVARIA.	AVERAGE.
0	51	45	42	34	27	40
5	56	55	53	53	53	54
10	53	51	50	50	50	51
15	48	47	46	46	45	46
20	43	43	43	42	41	42
30	35	35	35	34	34	35
40	27	27	27	26	26	27
50	19	20	20	19	18	19
60	13	13	13	12	12	13
70	7	8	7	7	7	7
80	4	4	4	3	4	4

SECTION V.

Commutation Tables.

Statistics are ancient, but their scientific forms are modern, as Professor Quetelet has observed. The origin of commutation columns, or preparatory researches from which the system was at length perfected, were published by William Dale in 1772, William Morgan in 1779, John Nicholas Tetens in 1785, George Barrett in 1812, and Griffith Davies (who added the M and R columns), in 1825. The work of David Jones in 1844 was the first to give an extended series of commutation tables; and his notation is still followed in the *Journal of the Institute of Actuaries*. Indeed all subsequent writers retain the D, C, M, R columns on the same plan. But it is very needful to bear in mind, that in the Tables of Dr. Farr, Chisholm, Henry and most American actuaries, the N and S columns only are shifted down one space; so that N_x and S_x denote the same quantities, which David Jones had designated by N_{m-1} and S_{m-1}. However, by simply adding 1 to the suffix of N_{m-1} and S_{m-1}, the formulas of Jones and of the Journal will evidently coincide with the change of Dr. Farr, which under present circumstances, is adopted in this collection.

The name of Commutation Tables was proposed by Professor De Morgan in 1840. He had noticed the singular property, that on transposing or commuting any two ages, say 30 and 34, whatever may be the present age, if less than 30, the person might now give up $\$D_{34}$ due at the age of 30, to receive $\$D_{30}$ if he lives to be 34. Similar properties belong to the N and other columns. *Journal*, Vol. 12, p. 332.

Proceeding now to explain the D and N commutation columns, let us refer to Sect. III, and multiply both numerator and denominator of the expression for the Life Annuity by the same factor v^x, which does not alter the value,

$$a_x = \frac{l_{x+1} \cdot v^{x+1} + l_{x+2} \cdot v^{x+2} + l_{x+3} \cdot v^{x+3} + \dots \dots}{l_x \cdot v^x}$$

$$a_x = \frac{D_{x+1} + D_{x+2} + D_{x+3} + D_{x+4} + \dots \dots}{D_x} = \frac{N_{x+1}}{D_x}.$$

Thus the formula is entirely resolved into similar elements, of the **type** $D_x = l_x \cdot v^x$. And N_{x+1} denotes the sum of the terms of the numerator continued to age 99, or to the end of the life table. The letters N, D, appear to be chosen from the words Numerator and Denominator. A Temporary Life Annuity for 3, or more generally n years, will evidently have the expression, where the exponents 3, n are used, (not in the Algebraic sense of powers), but simply to denote so many years after entry,

$$a_x^3 = \frac{D_{x+1} + D_{x+2} + D_{x+3}}{D_x} = \frac{N_{x+1} - N_{x+4}}{D_x}, \qquad a_x^n = \frac{N_{x+1} - N_{x+n+1}}{D_x}.$$

Again, referring to Section III, and multiplying both numerator and denominator by v^x, the Deferred Life Annuity takes the surprisingly simple form,

$$^n a_x = \frac{l_{x+n} \cdot v^{x+n}}{l_x \cdot v^x} \cdot a_{x+n} = \frac{D_{x+n}}{D_x} \cdot \frac{N_{x+n+1}}{D_{x+n}} = \frac{N_{x+n+1}}{D_x}.$$

The results already described, will exemplify the superior advantage of commutation columns, for determining the value of Life Annuities, whether immediate or deferred, for the whole life, or a portion of it. So manifest have these advantages appeared, that all the standard formulas of Life Annuities and Assurances have been resolved into similar elements. In all, six columns are required; whereof D, N, S are termed annuity columns, and C, M, R are termed insurance columns. These columns are connected with each other, by the following simple relations:

Let $v = \dfrac{1}{1+i}$, where i denotes the rate of interest;

$d_x = l_x - l_{x+1}$, where x denotes the age, d the deaths, l the living in the life table; then,

$$D_x = l_x \cdot v^x; \qquad C_x = d_x \cdot v^{x+1} = (l_x - l_{x+1})v^{x+1}.$$

$$N_x = D_x + D_{x+1} + D_{x+2} + \dots \dots \qquad M_x = C_x + C_{x+1} + C_{x+2} + \dots$$

$$S_x = N_x + N_{x+1} + N_{x+2} + \dots \dots \qquad R_x = M_x + M_{x+1} + M_{x+2} + \dots$$

Each series is to be continued to the end of the life table. By writing $x+1$ in place of x, and then eliminating, we find,

$$N_x = D_x + N_{x+1}; \qquad M_x = C_x + M_{x+1}.$$

$$S_x = N_x + S_{x+1}; \qquad R_x = M_x + R_{x+1}.$$

In the former equations for S and R, substituting in place of N and M the series of D or C which they represent, and adding, we have

$$S_x = D_x + 2D_{x+1} + 3D_{x+2} + \dots \dots; \qquad R_x = C_x + 2C_{x+1} + 3C_{x+2} + \dots \dots$$

NOTE.—By differentiating the life annuity in Section III, etc. with respect to v, we also have

$$\frac{d}{dv}a_x = \frac{S_{x+1}}{vD_x}; \qquad \frac{d}{dv}\left(\frac{N_x}{v^{x-1}}\right) = \frac{S_x}{v^x}; \qquad \frac{d}{dv}\left(\frac{M_x}{v^x}\right) = \frac{R_x}{v^{x+1}}.$$

Again, for temporary periods,

$$N_x - N_{x+n} = D_x + D_{x+1} + \ldots + D_{x+n-1}.$$

$$M_x - M_{x+n} = C_x + C_{x+1} + \ldots + C_{x+n-1}.$$

$$S_x - S_{x+n} = N_x + N_{x+1} + \ldots + N_{x+n-1}$$

$$= D_x + 2D_{x+1} + \ldots + n.D_{x+n-1} + n.N_{x+n}.$$

$$R_x - R_{x+n} = M_x + M_{x+1} + \ldots + M_{x+n-1}$$

$$= C_x + 2C_{x+1} + \ldots + n.C_{x+n-1} + n.M_{x+n}.$$

When C, M, R are not tabulated, their values can be derived from v, D, N, or S, by the following relations:

$$C_x = (l_x - l_{x+1})v^{x+1} = vD_x - D_{x+1}.$$

Making x to represent in separate equations, x, $x+1$, $x+2$, ... and taking the sum of results,

$$M_x = v.N_x - N_{x+1} = D_x - (1-v)N_x.$$

Again making x to represent x, $x+1$, $x+2$, ... and taking the sum as before,

$$R_x = v.S_x - S_{x+1} = N_x - (1-v)S_x.$$

Construction of Commutation Tables. Among various methods, the *first* proceeds by independent computation of C_x or D_x by six or rather seven place logarithms, in columns, according to the formulas,

$$D_x = v^x.l_x; \qquad C_x = v^{x+1}.d_x.$$

For this object, the common logarithms of the factors v^x, l_x, d_x are already given in Tables XXV and XXVII. The process of adding these logarithms, may be proved by comparing the sum of every ten results, with the corresponding sum obtained directly from the Tables. To facilitate this mode of Proof, the sum of each ten logarithms is added in Table XXV. The numbers answering to the logarithmic results, have been usually found from Filipowski's seven place Table of Anti-logarithms.

A *second* method devised by Gray, takes advantage of the simple factor $(1+i)$ or $1 \div v$ for determining D_x, after the column C_x has been previously constructed; thus,

$$D_x = (1+i)(D_{x+1} + C_x).$$

For example, by the Thirty Offices Table, with 4 per cent. interest, $D_{100} = 0$; and $C_{100} = 0$; then,

$$D_{99} = 1.04\,C_{99} = .082368;$$
$$D_{98} = 1.04(D_{99} + C_{98}) = .256988; \text{ etc.}$$

$$C_{99} = .079200$$
$$\times .04 = \underline{\quad 3168}$$
$$1.04\,C_{99} = .082368$$

The operation is easily applied with eight decimal places, and is *continuous*, so that the separate computation of D_x at every tenth or fifteenth value will verify the whole series.

A *third* method proceeds entirely by *continuous* operations with logarithms and Gray's Table of Log. $(1+x)$, according to the formulas,

$$D_{x+1} = vp_x D_x. \qquad C_{x+1} = v\frac{d_{x+1}}{d_x}C_x.$$

$$N_x = D_x + N_{x+1}, \qquad \lambda N_x = \lambda D_x + \lambda\left(1 + \frac{N_{x+1}}{D_x}\right).$$

$$M_x = C_x + M_{x+1}, \qquad \lambda M_x = \lambda C_x + \lambda\left(1 + \frac{M_{x+1}}{C_x}\right).$$

In all cases, when the elementary columns D and C have been fully constructed, the N and M columns can be formed from them, by successive additions; or by the previous logarithmic formulas, in connection with Gray's Table; and so with the S and R columns. The logarithm of vp_x is already given in Table XXXIII; and a column for $\lambda d_{x+1} - \lambda d_x$ will be simply the differences of λd_x in Table XXVII, to which λv can be added from a separate slip.

Commutation Tables for Joint Lives. In the older Tables of David Jones and of David Chisholm, $D_{xy} = v^x l_x l_y = D_x l_y$; where x denotes the *older* life. This distinction of the older age is not needed in De Morgan's arrangement, nor in the case of equal ages. Prof. De Morgan suggested the symmetrical form, adopted in the English Life Table:

$$D_{xy} = l_x l_y v^{\frac{x+y}{2}}. \qquad C_{xy} = (l_x l_y - l_{x+1} l_{y+1}) v^{\frac{x+y+2}{2}} = vD_{xy} - D_{x+1.y+1}.$$

$$N_{xy} = D_{xy} + D_{x+1.y+1} + \dots. \qquad M_{xy} = C_{xy} + C_{x+1.y+1} + \dots.$$

$$S_{xy} = N_{xy} + N_{x+1.y+1} + \dots. \qquad R_{xy} = M_{xy} + M_{x+1.y+1} + \dots.$$

For two Equal Ages, $\quad D_{xx} = l_x l_x v^x = l_x D_x, \qquad N_{xx} = D_{xx} + D_{x+1.x+1} + \dots.$

Two joint lives of unequal ages x, y have the same life annuity as two equal lives, u, u, defined in one way by the equation $a_{xy} = a_{uu}$, and in other ways under Makeham's law of mortality, by the relations,

$$p_x p_y = p_u p_u, \qquad p_u = \sqrt{p_x p_y}; \qquad q^x + q^y = 2q^u, \qquad u = x + \text{Cor.} \qquad \text{Table LXV.}$$

Since any two joint lives are thus reducible to the case of two equal ages, the corresponding D and N columns, annuities and premiums may be found in Tables LXVI–LXXIV. The radix of these Tables was taken as 100,000 at the age of ten; or the usual D and N values were divided by the constant factor D_{10}.

All the preceding Commutation formulas, for single life, become applicable to joint lives, by merely extending the suffixes to every life. For illustration, multiplying numerator and denominator of the formula in Section III for joint lives, by v^x, or by $v^{\frac{x+y}{2}}$, we obtain in either way,

$$a_{xy} = \frac{D_{x+1.y+1} + D_{x+2.y+2} + \dots}{D_{xy}} = \frac{N_{x+1.y+1}}{D_{xy}}.$$

The law is perfectly regular for two, three, or any number of joint lives; thus,

$$c_{xyz} = \frac{D_{x+1.y+1.z+1} + D_{x+2.y+2.z+2} + \cdots}{D_{xyz}} = \frac{N_{x+1.y+1.z+1}}{D_{xyz}}.$$

$$M_{xyz} = D_{xyz} - (1-v)N_{xyz} = vN_{xyz} - N_{x+1.y+1.z+1}.$$

NOTE 1.—It will be proper to observe, that formulas on the plan of De Morgan, when applied to *the order of survivorship* will involve the square root of v. Thus the single premium for an insurance of \$1 " on x against y," that is, payable on the death of x provided y be then living, is

$$\frac{vN_{xy} - N_{x+1.y+1} + \sqrt{v}(N_{x.y+1} - N_{x+1.y})}{2D_{xy}}.$$

The annual premium will be found by simply changing D_{xy} to N_{xy}. In each term of the numerator, the sum of the suffixes added to the exponent of $\sqrt{v}$ counted as 1, gives the homogeneous sum $x+y+2$.

NOTE 2.—*Repeated additions of λv.* There are two methods of correcting the final decimal. For example, at 4 per cent. λv is 1.982,966,6607, which falls between the six-decimal values 1.982,967 and 1.982,966. Firstly then, if no more than ten or fifteen results are to be computed so as to be exact to six decimal places, the computation can be made with four extra decimals, that is, with ten places, retaining only six at the end of the process. But if λv is to be implicitly added a hundred times in computing so many results exact to six places, the computation can be made with five extra decimals, in order that the first six places may be accurate in all the results.

Secondly, the computations can be correctly made with six decimals by suitable changes of the sixth decimal. In using 1.982,967 for λv, we commit an error of .338 in the sixth place, in excess; and in using 1.982,966, we commit an error of .661 in deficiency. A compensation will ensue by using the endings 7 and 6 in frequency, inversely as those errors; that is, as 661 : 338, or 2 : 1 nearly. Hence the sixth decimal of λv at 4 per cent. should be taken as 7, 7, 6, 7, 7, 6, ... in order. At 5 per cent. the ratio is 7 : 3, so that the sixth decimal of λv should be 9, 9, 8, 9, 9, 8, 9, 9, 8, 9, when the series recommences. An adjustment can be made at every tenth value. These corrections have already been applied to the sixth decimal place in Table XXXIII, and in all the other regular Tables.

SECTION VI.

Single and Annual Premiums of Insurance.

By general custom, the sum insured is assumed in theory, to be payable at the *end* of the year of decease. The age at which the insurance is effected is often termed the age of issue, or *the age of entry*. The contract between the insuring party, and the insured is named the *policy*. The first premium thereon is paid at the time when the contract is made; and the subsequent payments of premium are due at the commencement of each policy year. The premiums, however, may be single, annual, half-yearly or quarterly. The *single* premium pays for the insurance in full at the beginning, in one payment.

By "*deferred premium*" is meant, the remaining semi-annual or quarterly premiums to be paid during the current policy year. In the estimate of liabilities, these deferred premiums, with some reduction for the expense of collection, and for discontinuances, are accounted as Assets; and in case of death, the Company usually deducts them from the policy. To provide for expenses, fluctuations of mortality and other contingencies, the *net premium* of theory is augmented in practice, by a margin or loading, such as one-fifth, one-fourth or one-third, and is then termed the *gross or Office premium*.

In order to explain the computation of net premiums, let l_x denote the number living at the age x in the life table, and let i and v represent the given rate of interest.

1. SINGLE PREMIUMS.

Let A_x denote the single premium at the age of entry x, to insure \$1 payable at the end of the year of death. Then by the principles of the system of Probabilities,

$$A_x = \frac{(l_x - l_{x+1})v + (l_{x+1} - l_{x+2})v^2 + l_{x+2} - l_{x+3})v^3 + \dots}{l_x}.$$

Here the tabular probability of the life failing in the 1st year is $\dfrac{l_x - l_{x+1}}{l_x}$ or $\dfrac{d_x}{l_x}$; and this multiplied by the sum at risk \$1, and again by v, to reduce to present value, gives the first term. In like manner the remaining terms express the present value of the mathematical expectation for the 2d year, the 3d year, and so on to the end of the life table. This sum is therefore the present value of the life insurance.

Writing d_x for its equal $l_x - l_{x+1}$, and similarly for other ages, then multiplying both numerator and denominator by v^x, which does not alter the value, the fraction is changed to the *commutation* terms:

$$A_x = \frac{d_x \cdot v^{x+1} + d_{x+1} \cdot v^{x+2} + d_{x+2} \cdot v^{x+3} + \dots}{l_x v^x},$$

$$A_x = \frac{C_x + C_{x+1} + C_{x+2} + \dots}{D_x} = \frac{M_x}{D_x},$$

$$A_x = 1 - (1 - v)\frac{N_x}{D_x}.$$

In the first formula, the positive and the negative terms are easily identified with the series for the *life annuity*, so that we have also

$$A_x = v - a_x + v a_x = 1 - (1 - v)(1 + a_x) = \frac{1 - i a_x}{1 + i}.$$

To facilitate practical applications, the single premium for life is already computed in the four different forms of Tables XXX and XXXI, L and LI.

2. ANNUAL PREMIUMS.

Instead of a single premium, the payment for insurance is more usually made by equal annual premiums at the beginning of each policy year. Let P_x denote such annual payments on \$1 insured. The present value of all these premiums being equal to the single premium, we have for common life policies, on \$1,

$$P_x(1 + a_x) = A_x, \text{ whence } P_x = \frac{A_x}{1 + a_x}.$$

$$P_x = \frac{1}{1 + a_x} - (1 - v) = (1 - v)\frac{A_x}{1 - A_x}.$$

$$P_x = \frac{M_x}{N_x} = \frac{D_x}{N_x} - (1 - v) = v - \frac{N_{x+1}}{N_x}.$$

For common life policies, the annual premium P or π is already computed in Table XXIX, for each \$1000 insured.

3. INSURANCE BY A LIMITED NUMBER (n) OF ANNUAL PREMIUMS.

The rule proceeds on the same general principle as before. That is, "divide the single premium by unity added to the present value of a temporary annuity for one year less than (n) the number of premiums which are to be paid":

$$P_x = \frac{A_x}{1 + a_x^{n-1}} = \frac{M_x}{N_x - N_{x+n}}.$$

Example. A person at the age of 39 years insures his life for \$7000 by ten equal premiums, to be paid annually at the beginning of the first ten years; required this premium when interest is 4 per cent.:

Table LI, - - - - $\lambda A_{39} = \bar{1}.552218$	Table XXXVI, - - $\lambda M_{39} = 3.796864$
" XLIV, - $\lambda(1 + a_{39}^{n-1}) = 0.908205$	$N_{39} = 293,818.6$ ⎱ $\lambda = 5.152851$
$\ldots \bar{2}.644013$	$N_{49} = 151,634.5$ ⎰ $\ldots \bar{2}.644013$
" LXXXII, - - P_x - 0.0440568	$142,184.1$ P_x - 0.0440568
$\times 7000$	$\times 7000$
Annual Premium - - - - $= \$308.3976$	Annual Premium - - - - $= \$308.3976$

For five, ten, fifteen or twenty payments, the premiums are already computed in Table LXI, for each \$1000 insured.

NOTE.—If a special payment is made at the beginning, in order to reduce the future annual premiums, it can be regarded as a single premium, for one part of the sum insured; and the annual premium will be computed on the remaining part.

4. TEMPORARY INSURANCES.

Required the single premium to insure \$1 for 7 or m years. By reference to the explanation of the first three formulas of this Section, it will be seen that the single premium will be the sum of the first m terms of the series there described; thus,

$$A_x^m = \frac{C_x + C_{x+1} + \ldots + C_{x+m-1}}{D_x} = \frac{M_x - M_{x+m}}{D_x}.$$

$$A_x^m = \frac{v(N_x - N_{x+m}) - (N_{x+1} - N_{x+m+1})}{D_x}.$$

The equivalent annual premium is obtained by dividing the single premium by 1 plus the temporary annuity for one year less:

$$P_x^m = \frac{A_x^m}{1 + a_x^{m-1}} = v - \frac{N_{x+1} - N_{x+m+1}}{N_x - N_{x+m}} = v - \frac{a_x^n}{1 + a_x^{n-1}}.$$

$$P_x^m = \frac{M_x - M_{x+m}}{N_x - N_{x+m}} = \frac{D_x - D_{x+m}}{N_x - N_{x+m}} - (1 - v).$$

The Premium for Temporary Insurance on each \$1 for One Year only, is

$$P_x^1 = \frac{C_x}{D_x} = v(1-p_x) = vq_x = v - \frac{D_{x+1}}{D_x}.$$

For example, by Tables LII and LIII, at the age of 35 years, on \$1000 insured for 7 years, the single premium is \$51.70, or the annual premium is \$8.486.

5. PURE ENDOWMENTS.

The single premium or present value of \$1 to be received at the end of m years, if the party now aged x be then living, is

$$A_x^m = \frac{l_{x+m}}{l_x} v^m = \frac{D_{x+m}}{D_x}.$$

The annual premium for the same, payable at the beginning of each year, unless the risk is voided by death, is found on the principle before described :

$$P_x^m = \frac{A_x^m}{1 + a_x^{m-1}} = \frac{D_{x+m}}{N_x - N_{x+m}}, \text{ on \$1.}$$

Table LXIII, $\lambda P_x^m = 1. - \lambda B_x^m$, on \$1 Pure Endowment.

For example, at the age 16, the annual premium is \$173.88 on \$1000, payable at the age of 21 if the person be then living. The same result is also found by subtracting the premium of term insurance, Tables LII and LIII, from the premium of endowment insurance, next to be described.

6. ENDOWMENT INSURANCES.

The sum insured is payable on attaining a specified age, or sooner in the event of death. By simply adding the single premiums of temporary insurance and of pure endowment for the term of m years, after the age of entry x, we have at once the single premium of Endowment Insurance on \$1 :

$$A_x^{(m)} = \frac{M_x - M_{x+m} + D_{x+m}}{D_x} = 1 - (1-v)(1 + a_x^{m-1}).$$

To find the equivalent annual premium, we divide by 1 plus the annuity :

$$P_x^m = \frac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+m}} = \frac{1}{1 + a_x^{m-1}} - (1-v), \text{ on \$1.}$$

For a *limited* number (n) of equal annual premiums to be paid at the beginning of the first (n) years of the whole period m, the divisor is changed as below :

$$P_x^n = \frac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+n}}, \text{ on \$1.}$$

The various species of Endowment Premiums are already computed in the seven Tables LIV to LX.

COMPUTATION OF TABLES.—By taking the difference of single premiums, and observing that $M_{x+m+1} - M_{x+m} = -C_{x+m} = -vD_{x+m} + D_{x+m+1}$, we obtain the simplified annual difference :

$$A_x^{(m)} - A_x^{(m+1)} = \frac{(1-v)D_{x+m}}{D_x}.$$

This difference can be easily computed by the aid of two moveable slips of paper, the one containing λD, and the other $\lambda(1-v) + \lambda D$. When the period of insurance is only 1 year, the premium is v, as shown in Table LIV. From v, we subtract the difference $(1-v)D_{x+1} \div D_x$ to give the single premium for the term of 2 years. From this, we subtract $(1-v)D_{x+2} \div D_x$ to give the single premium for the term of 3 years; and so on.

But in single Examples, the shortest method will be to find the logarithm of 1 plus the temporary annuity for one year less, in Table XLIV–XLVII. This will guide to the required premium, by mere inspection, in the next or Conversion Tables.

7. DEFERRED INSURANCES.

On the principle of deferred Annuities in Sections III and V, and by Section VI, the present values of the temporary and of the complementary deferred insurance, added together, equal the present value for the whole life. Hence by subtraction, the present value or single premium to insure a person now aged x, for the period of life which may remain after the age $x+m$, will be on each \$1 insured,

$$_mA_x = \frac{M_{x+m}}{D_x} = \frac{D_{x+m} - (1-v)N_{x+m}}{D_x}.$$

The equivalent annual premium payable m years, will be

$$_mP_x = \frac{M_{x+m}}{N_x - N_{x+m}}, \text{ on each \$1.}$$

The annual premium payable during the whole life, on \$1 insured, is

$$_mP_x = \frac{M_{x+m}}{N_x} = \frac{_mA_x}{1+a_x}.$$

For a *Deferred Temporary Insurance*, or to be deferred m years, then to continue in force during τ years; if the annual premiums are payable during $m + \tau$ years, we have on each \$1 insured,

$$\text{Single Premium} = \frac{M_{x+m} - M_{x+m+\tau}}{D_x}.$$

$$\text{Annual Premium} = \frac{M_{x+m} - M_{x+m+\tau}}{N_x - N_{x+m+\tau}}.$$

8. RETURN PREMIUMS.

Required the net annual premium P to secure a *Pure Endowment* of \$1 at the end of m years, if the life now aged x should live so long, *or the Return of all Premiums paid*, at the end of the year of death, if it occur before that time.

This plan may be regarded as an endowment of \$1, added to a series of m deferred temporary insurances of P. By making the collective annual premiums equal to P, then substituting R, and reducing the equation, we find

$$\frac{D_{x+m}+P_x(M_x+M_{x+1}+\ldots+M_{x+m-1}-mM_{x+m})}{N_x-N_{x+m}}=P_x,$$

$$P_x=\frac{D_{x+m}}{N_x-N_{x+m}-R_x+R_{x+m}+mM_{x+m}}.$$

Also by changing D_{x+m} to N_{x+m}, we here determine the annual **premium**, payable from age x to age $x+m-1$, to provide a *Deferred Life Annuity* of $1 *per annum*, first payment at age $x+m$. *The premiums paid, are to be returned without interest*, six months after death, in the event of death before the age $x+m$. Or if the premiums are not to be returned, cancel R and M in the above formula.

By the same mode of solution, *the Single Premium of a Pure Endowment* of $1, with return of the premium six months after death, if it occur before the age $x+m$, will be

$$A_x^{(m)}=\frac{D_{x+m}}{D_x-(M_x-M_{x+m})}.$$

Required the net premium to insure $1 for the *Whole Life*, and the return of gross premiums equal to g times the net, without interest, six months after death.

Let P denote the net annual premium to provide for the ordinary insurance of $1, together with the series of deferred insurances of gP, all for the whole life. Then, as before described:

$$P_x=\frac{M_x+gP_x(M_x+M_{x+1}+\cdots)}{N_x}=\frac{M_x+gP_xR_x}{N_x};\text{ or}$$

$$\text{Annual Premium, }P_x=\frac{M_x}{N_x-gR_x}.$$

$$\text{Single Premium }A_x=\frac{M_x}{D_x-gM_x},\text{ by similar solution.}$$

By making g to be 1, the solutions will apply to the case of *net* return premiums, without interest.

Again, if the insurance of $1 for the whole life is to be secured by m *Limited Annual Payments* of P_x, with return of the gross premiums, six months after death, or at the end of the year of death:

$$P_x=\frac{M_x}{N_x-N_{x+m}-g(R_x-R_{x+m})}.$$

9. INCREASING AND DECREASING SCALES OF PREMIUMS.

Suppose the annual premium to increase by a certain fraction of the first premium every n years, and after r such additions, the premium to continue constant during the remainder of life. Required the annual premium during the first n years.

On each $1 insured let P denote the first annual premium, and q its proportional increase, added at the end of every n years.

The present value of all the premiums P, continued for the whole life, is $P(1+a_x)$. And the present value of all the increments Pq is that of so many deferred

life annuities. By equating the expression of the single premium to the sum of these present values, and then reducing the equation:

$$A_x = \frac{M_x}{D_x} = P_x \cdot \frac{N_x + q(N_{x+n} + N_{x+2n} + \ldots + N_{x+rn})}{D_x},$$

$$P_x = \frac{M_x}{N_x + q(N_{x+n} + N_{x+2n} + \ldots + N_{x+rn})}.$$

Instead of a proportional increase q of the premium, let there be *an absolute increase h in every n years.* the premium to remain constant after rn years, to find the first premium P_x. We have only to substitute h in place of its equal P_q in the primary formula, then reducing, we find again on $1 insured:

$$P_x = \frac{M_x - h(N_{x+n} + N_{x+2n} + \ldots + N_{x+rn})}{N_x}.$$

When the scale of premiums is to be *decreasing,* let the sign of q and of h be reversed in the given formulas.

The above method is evidently applicable to premiums reduced or increased arbitrarily. But as David Jones has observed, the value of q or h should be chosen so as to make the premium for the first interval more than the premium for a risk to be determined at the expiration of that term, as the party assured, has the option of continuing or discontinuing the risk.

In the case of annual premiums diminished at the end of every successive year, by the mth part of the first premium, so that after m payments, the policy is paid up, the first solution will apply by making $n = 1$, $q = -\frac{1}{m}$, and substituting S for its equal. Thus the first premium on $1 insured, will be

$$P_x = \frac{M_x}{N_x - \frac{1}{m}(S_{x+1} - S_{x+m+1})}.$$

10. INCREASING AND DECREASING INSURANCES.

The *single premium* for a temporary Insurance for m years, commencing at $a and increasing $b each year, will be

$$\frac{a(M_x - M_{x+m}) + b(M_{x+1} - M_{x+m}) + b(M_{x+2} - M_{x+m}) + \ldots + b(M_{x+m-1} - M_{x+m})}{D_x}$$

This aggregate is evidently made up of the present insurance of $a together with the series of deferred temporary insurances of $b. By substituting R for its well known equal, we have the required formula:

$$\text{Single Premium} = \frac{a(M_x - M_{x+m}) + b[R_{x+1} - R_{x+m} - (m-1)M_{x+m}]}{D_x}$$

By merely reversing the sign of b, we obtain the single premium for a similar insurance, commencing with $a and decreasing $b annually.

In either case, the divisor to give the *annual premium* will be

$$1+a_x^{m-1}, \qquad \text{or} \qquad \frac{N_x-N_{x+m}}{D_x}.$$

By extending $x+m$ to the end of the life table, we evidently have for an insurance commencing at $a and *increasing* $b each year,

$$\text{Single Premium} \; = \frac{aM_x+bR_{x+1}}{D_x}.$$

$$\text{Annual Premium} = \frac{aM_x+bR_{x+1}}{N_x}.$$

When the similar insurance is to *decrease* $b each year, we have only to make b negative.

Finally, making $a = b = 1$, we obtain the more simple formulas for a life insurance commencing with $1, and *increasing* $1 annually:

$$\text{Single Premium} = \frac{R_x}{D_x}. \qquad \text{Annual Premium} = \frac{R_x}{N_x}.$$

11. PRICE OF ANNUITIES SECURED BY LIFE INSURANCE.

An ordinary life annuity of $a *per annum* is to be sold. Required the price $s which will allow the purchaser a given rate i of interest, besides paying the premium of life insurance to secure the return of his outlay after the death of the annuitant.

SOLUTION.—The purchaser must insure the price s, and a final annuity a, both payable at the end of the year of death of the annuitant. An annuity a will then be receivable at the end of each year, for which, the premium will be payable at the beginning of the year. But each premium may be transferred from the beginning, to its equivalent at the end of the year, by adding the year's interest. When this equivalent is subtracted from the annuity a, the remainder must be sufficient to pay si the current year's interest on the price.

Accordingly, if p denote the office annual premium to insure $1 for life, then the premium payable will be $p(s+a)$. Adding the year's interest, and subtracting from a, we have

$$a-p(s+a)(1+i) = si.$$

$$\text{Hence, the Price} \qquad s = a \cdot \frac{1-p(1+i)}{i+p(1+i)}.$$

$$\text{The Rate of Interest} \quad i = \frac{a-p(s+a)}{s+p(s+a)}.$$

In case the Problem is changed in any of its conditions, a corresponding change will be made in the solution. Thus, if the annuity a is to be continued to the end of the year of death, the purchaser need only insure the price s, and the solution will be

$$a-ps(1+i) = si; \qquad s = \frac{a}{i+p(1+i)}; \qquad i = \frac{a-ps}{s(1+p)}.$$

Or if the annuity a is to be paid at the beginning of the first, and each subsequent year of life, the price s alone need be insured, and the equations will evidently be

$$(a-ps)(1+i) = si; \qquad s = \frac{a(1+i)}{i+p(1+i)}; \qquad = \frac{a-ps}{s(1+p)-a}.$$

12. INSURANCE ON FEMALE LIFE.

From the Observations on Female Life in Table II, a Life Table has been constructed and graduated on the plan mentioned at page 237. The usual columns are given in Table LXXVII, in which the column of annual mortality q exhibits the very singular feature of the almost uniform value 0.011 from the age of 20 to 50 years. The principal cause is indicated on page 34. On account of this and other peculiarities, a simple correction of the age has appeared sufficient for entering and employing the general Tables for male life, to give the values for female life.

Preparatory to this object, the 4 per cent. commutation and annuity columns were computed in Table LXXVIII. The simple Formula for determining the correction or column c, and an illustrative Example are given on the first page of this Table. The sum of the actual Age and Correction may be termed the Equivalent or *Relative Age*. And the Tables of Male Life entered with this Relative Age, give the true Annuity and Premium for Female Life.

On account of the smallness and fluctuating nature of the corrections above the age of 39, and the irregularities of the data at the oldest ages, it appears that *above the age of 39*, the "rating up," or *correction of the age can safely be omitted*. That is, the actual age when above 39, may be taken as the Relative Age of Female Life.

In relation to *Months*, and under the age 39, the actual age, from the birth-day to the date of entry, is to be expressed in years and months, as well as the correction, and their sum, taken to the nearest integral year, will be the Relative Age. Thus if a female life at entry has the age 25 Y. 8 M., and from Table LXXVIII, or page *226, the correction is 4 Y. 3 M., the nearest Relative Age will be 30 years.

13. INSURANCE ON JOINT LIVES.

Required the single premium to insure \$1 during the joint existence of two lives, x and y, the insurance to be paid at the end of the year of the first death.

The mathematical expectation (pages 235, 234) for each year, as the third for example, will be the product of the present value of the insurance v^3, by the compound probability $\frac{l_{x+2}}{l_x}\frac{l_{y+2}}{l_y}$, that both persons will be alive at the beginning of the third year, multiplied by the probability $\left(1-\frac{l_{x+3}}{l_{x+2}}\frac{l_{y+3}}{l_{y+2}}\right)$ that both will *not* live through that year, or that one or both will die in the third year. The sum of the series of similar expectations for each and every year, to the end of life, gives the total present value, or Single Premium A_{xy}; thus,

$$A_{xy} = \frac{l_x l_y}{l_x l_y}\left(1-\frac{l_{x+1}}{l_x}\frac{l_{y+1}}{l_y}\right)v + \frac{l_{x+1}l_{y+1}}{l_x l_y}\left(1-\frac{l_{x+2}}{l_{x+1}}\frac{l_{y+2}}{l_{y+1}}\right)v^2 + \ldots$$

Performing the multiplications indicated, we have

$$A_{xy} = \frac{(l_x l_y - l_{x+1}l_{y+1})v + (l_{x+1}l_{y+1}-l_{x+2}l_{y+2})v^2 + (l_{x+2}l_{y+2}-l_{x+3}l_{y+3})v^3 + \ldots}{l_x l_y}$$

Again, multiplying and dividing by $v^{\frac{x+y}{2}}$, in order to substitute C, according to the notation of page 247:

$$A_{xy} = \frac{C_{xy}+C_{x+1.y+1}+C_{x+2.y+2}+\ldots}{D_{xy}} = \frac{M_{xy}}{D_{xy}}.$$

$$A_{xy} = 1 - \frac{(1-v)N_{xy}}{D_{xy}} = 1 - (1-v)(1+a_{xy}).$$

Annual Premium, $\quad P_{xy} = \dfrac{M_{xy}}{N_{xy}} = \dfrac{D_{xy}}{N_{xy}} - (1-v).$

Annual Premium, $\quad P_{xy} = \dfrac{A_{xy}}{1+a_{xy}} = \dfrac{1}{1+a_{xy}} - (1-v).$

For a joint insurance of \$1 on three lives, x, y, and z, we have only to substitute xyz in place of the suffix xy in the last formulas; and so for four or more lives. The insurance on joint lives continues only while they are *all* living. Also, the Premiums may be found from Conversion Tables XLVIII and XLIX.

For a *Temporary Insurance* of \$1 to be paid at the end of the year of the first death of the two lives x or y, if it occurs within n years:

Single Premium,

$$A_{xy}^{n} = \frac{M_{xy} - M_{x+n.y+n}}{D_{xy}} = \frac{v(N_{xy} - N_{x+n.y+n}) - (N_{x+1.y+1} - N_{x+n+1.y+n+1})}{D_{xy}}.$$

Annual Premium, $\quad P_{xy}^{n} = \dfrac{A_{xy}^{n}}{1+a_{xy}^{n-1}} = v - \dfrac{N_{x+1.y+1} - N_{x+n+1.y+n+1}}{N_{xy} - N_{x+n.y+n}}.$

For a *Deferred Insurance* of \$1 payable on the first death of x or y, if it occur after the expiration of n years:

Single Premium, $\quad {}^{n}A_{xy} = \dfrac{M_{x+n.y+n}}{D_{xy}} = \dfrac{D_{x+n.y+n} - (1-v)N_{x+n.y+n}}{D_{xy}}.$

Single Premium, $\quad {}^{n}A_{xy} = \dfrac{D_{x+n.y+n}}{D_{xy}} \cdot A_{x+n.y+n}.$

Annual Premium for n payments, $\quad {}^{n}P_{xy} = \dfrac{M_{x+n.y+n}}{N_{xy} - N_{x+n.y+n}}.$

Annual Premium during joint life, $\quad {}^{n}P_{xy} = \dfrac{M_{x+n.y+n}}{N_{xy}}.$

For an Insurance of \$1 *on the Longest of Two Lives*, x and y:

Single Premium, $\quad A_{xy} = A_x + A_y - A_{xy} = 1 - (1-v)(1 + a_x + a_y - a_{xy}).$

Annual Premium, $\quad P_{xy} = \dfrac{A_x + A_y - A_{xy}}{1 + a_x + a_y + a_{xy}} = \dfrac{1}{1 + a_x + a_y - a_{xy}} - (1-v).$

For a *Temporary Insurance* of \$1 for n years *on the Longest or Survivor of Two Lives*, x and y:

Single Premium, $\quad A_{xy}^{n} = A_x^{n} + A_y^{n} - A_{xy}^{n}.$

Annual Premium, $\quad P_{xy}^{n} = \dfrac{A_x^{n} + A_y^{n} - A_{xy}^{n}}{1 + a_x^{n-1} + a_y^{n-1} - a_{xy}^{n-1}}.$

TABLES FOR TWO JOINT LIVES, EQUAL AGES.—The agreement of the Thirty Offices Experience with Makeham's law of mortality, offers a great advantage, in superseding the old and eumbrous system of joint life tables, by the new method of equal lives or ages, shown in Tables LXV–LXXVII. For, under Makeham's law, if the joint probability $p_x p_y$ is equal to $p_u p_u$, that of two equal lives, at the ages of entry, the relation of equality will always continue during their joint existence.

Example. When interest is 4 per cent., required the annual and the single premium to insure $1000, payable at the end of the year of the first death of two lives, x aged 30 and y aged 40 years. Entering Table LXV, with the difference of ages $y-x$, or 10 years, we find the correction 6 Y. 1.8 M., which being added to the younger age 30, gives the nearest Equal Age 36. That is, 36, 36 may be substituted for the given ages 30 and 40. Entering Table LXXIII with 36 years, we find the annual premium $29.74; and in the next Table, the single premium $436.06.

METHOD FOR THREE JOINT LIVES.—By Table LXV, change the given Ages x, y, z, to the two equal Ages u, u, which increase equally in equal times, like the actual ages, from the date of entry. The current value of u, in any year, increased by the Annual Correction below, under the proper rate of interest, will be the argument for entering Tables LXV–LXXVII, for premiums, reserves, etc. The correction can be adjusted to other rates of interest by the Difference column.

THREE LIVES.—ANNUAL CORRECTION (c) TO THE EQUAL AGE u.

Equal Ages u.	3 Per Cent.	4 Per Cent.	5 Per Cent.	Diff.
Yr.	Y. M.	Y. M.	Y. M.	M.
10	13 8.7	14 11.7	16 1.6	13.9
11	13 2.2	14 4.5	15 5.8	13.3
12	12 8.1	13 9.7	14 10.4	12.7
13	12 2.2	13 3.0	14 3.1	12.1
14	11 8.4	12 8.5	13 8.0	11.5
15	11 2.7	12 2.1	13 1.1	11.0
16	10 9.1	11 7.9	12 6.4	10.5
17	10 3.7	11 1.9	11 11.8	9.9
18	9 10.5	10 8.1	11 5.5	9.4
19	9 5.4	10 2.4	10 11.2	8.8
20	9 0.5	9 8.9	10 5.2	8.3
21	8 7.7	9 3.6	9 11.4	7.8
22	8 3.0	8 10.5	9 5.9	7.4
23	7 10.5	8 5.5	9 0.4	6.9
24	7 6.2	8 0.8	8 7.3	6.5
25	7 2.0	7 8.1	8 2.1	6.0
26	6 9.9	7 3.6	7 9.2	5.6
27	6 5.9	6 11.3	7 4.4	5.1
28	6 2.1	6 7.1	6 11.8	4.7
29	5 10.5	6 3.2	6 7.4	4.2
30	5 7.1	5 11.4	6 3.2	3.8
31	5 3.7	5 7.7	5 11.3	3.6
32	5 0.4	5 4.1	5 7.5	3.4
33	4 9.5	5 0.8	5 3.9	3.1
34	4 6.5	4 9.5	5 0.4	2.9
35	4 3.7	4 6.4	4 9.1	2.7
36	4 1.0	4 3.5	4 6.0	2.5
37	3 10.3	4 0.6	4 2.9	2.3
38	3 7.8	3 9.9	4 0.0	2.1
39	3 5.4	3 7.3	3 9.2	1.9
40	3 3.2	3 4.9	3 6.6	1.7
41	3 0.9	3 2.5	3 4.1	1.6
42	2 10.8	3 0.3	3 1.7	1.4
43	2 8.9	2 10.2	2 11.5	1.3
44	2 7.0	2 8.2	2 9.3	1.1
45	2 5.2	2 6.3	2 7.3	1.0
46	2 3.4	2 4.4	2 5.3	.9
47	2 1.8	2 2.7	2 3.5	.8
48	2 0.3	2 1.1	2 1.9	.8
49	1 10.9	1 11.6	2 0.3	.7
50	1 9.5	1 10.1	1 10.7	.6
51	1 8.1	1 8.7	1 9.2	.5
52	1 6.9	1 7.4	1 7.9	.5
53	1 5.6	1 6.1	1 6.5	.4
54	1 4.6	1 5.0	1 5.4	.4
55	1 3.5	1 3.9	1 4.2	.3
56	1 2.4	1 2.8	1 3.1	.3
57	1 1.6	1 1.9	1 2.1	.2
58	1 0.6	1 0.9	1 1.1	.2
59	0 11.9	1 0.1	1 0.2	.1
60	0 11.1	0 11.3	0 11.4	.1
61	0 10.3	0 10.5	0 10.6	.1
62	0 9.7	0 9.8	0 9.9	.1
63	0 9.0	0 9.1	0 9.2	.1
64	0 8.5	0 8.5	0 8.7	.2
65	0 7.8	0 7.8	0 8.0	.2
66	0 7.3	0 7.3	0 7.5	.2
67	0 6.8	0 6.8	0 7.0	.2
68	0 6.3	0 6.3	0 6.4	.1
69	0 5.9	0 5.9	0 6.0	.1
70	0 5.5	0 5.5	0 5.5	
71	5.1	5.1	5.1	
72	4.7	4.7	4.7	
73	4.3	4.3	4.3	
74	4.0	4.0	4.0	
75	0 3.7	0 3.7	0 3.7	
76	3.4	3.4	3.4	
77	3.2	3.2	3.2	
78	2.9	2.9	2.9	
79	2.7	2.7	2.7	
80	0 2.5	0 2.5	0 2.5	
81	2.3	2.3	2.3	
82	2.1	2.1	2.1	
83	1.9	1.9	1.9	
84	1.8	1.8	1.8	
85	0 1.6	0 1.6	0 1.6	
86	1.4	1.4	1.4	
87	1.2	1.2	1.2	
88	.9	.9	.9	
89	.8	.8	.8	
90	0 .8	0 .8	0 .8	
91	.8	.8	.8	
92	.7	.7	.7	
93	.6	.6	.6	
94	.5	.5	.5	
95	0 .4	0 .4	0 .4	
96	.4	.4	.4	
97	.2	.2	.2	
98	.1	.1	.1	

FORMULA, for 3.654, 4.660, 5.666, or the rate of vs, $a_{uu} = a_{u+c.u+c}$, for 3, 4, 5 per cent. interest respectively, or the rate of v.

METHOD FOR FOUR JOINT LIVES.—By Table LXV, change the three youngest Ages to two equal Ages, u, u. With u, u, and the fourth or oldest age, re-enter Table LXV, and find the equal ages, u', u', for record, at the date of entry. In any year, the current value of u' augmented by the Annual Correction below, will be the argument for entering Tables LXV–LXXVII, for the life annuity or other monetary value.

FOUR LIVES.—ANNUAL CORRECTION (c) TO THE EQUAL AGE u'.

Equal Ages u'.	3 Per Cent.	4 Per Cent.	5 Per Cent.	Diff.	Equal Ages u'.	3 Per Cent.	4 Per Cent.	5 Per Cent.	Diff.	Equal Ages u'.	3 Per Cent.	4 Per Cent.	5 Per Cent.
Yr.	Y. M.	Y. M.	Y. M.	M.	Yr.	Y. M.	Y. M.	Y. M.	M.	Yr.	Y. M.	Y. M.	Y. M.
10	21 10.4	23 1.6	24 4.2	14.6	40	6 .5	6 3.2	6 5.9	2.7	70	0 10.6	0 10.7	0 10.7
11	21 1.8	22 4.5	23 6.7	14.2	41	5 9.1	5 11.6	6 2.1	2.5	71	9.8	9.9	9.9
12	20 5.4	21 7.6	22 9.3	13.7	42	5 4.9	5 7.2	5 9.5	2.3	72	9.0	9.1	9.1
13	19 9.1	20 10.7	22 0.0	13.3	43	5 1.5	5 3.6	5 5.7	2.1	73	8.6	8.6	8.6
14	19 0.9	20 2.0	21 2.8	12.8	44	4 10.1	5 0.0	5 1.9	1.9	74	7.8	7.8	7.8
15	18 4.8	19 5.4	20 5.8	12.4	45	4 7.0	4 8.7	4 10.4	1.7	75	0 7.3	0 7.3	0 7.3
16	17 9.0	18 9.1	19 9.0	11.9	46	4 3.9	4 5.5	4 7.1	1.6	76	6.8	6.8	6.8
17	17 1.2	18 0.8	19 0.3	11.5	47	4 1.0	4 2.4	4 3.8	1.4	77	6.2	6.2	6.2
18	16 5.6	17 4.7	18 3.7	11.0	48	3 10.2	3 11.5	4 0.8	1.3	78	5.8	5.8	5.8
19	15 10.1	16 8.7	17 7.3	10.6	49	3 7.5	3 8.6	3 9.7	1.1	79	5.3	5.3	5.3
20	15 2.9	16 1.0	16 11.1	10.1	50	3 5.0	3 6.0	3 7.0	1.0	80	0 4.9	0 4.9	0 5.0
21	14 7.8	15 5.4	16 3.0	9.6	51	3 2.5	3 3.4	3 4.3	.9	81	4.4	4.4	4.4
22	14 1.0	14 10.1	15 7.2	9.1	52	3 0.3	3 1.1	3 1.9	.8	82	4.0	4.0	4.0
23	13 6.0	14 2.7	14 11.3	8.6	53	2 10.0	2 10.8	2 11.6	.8	83	3.7	3.7	3.7
24	12 11.5	13 7.7	14 3.8	8.1	54	2 8.0	2 8.7	2 9.4	.7	84	3.3	3.3	3.3
25	12 5.1	13 0.8	13 8.4	7.6	55	2 6.0	2 6.6	2 7.2	.6	85	0 3.1	0 3.1	0 3.0
26	11 10.8	12 6.1	13 1.4	7.3	56	2 4.1	2 4.6	2 5.1	.5	86	2.7	2.7	2.7
27	11 4.6	11 11.5	12 6.4	6.9	57	2 2.3	2 2.8	2 3.2	.4	87	2.4	2.4	2.4
28	10 10.8	11 5.2	11 11.8	6.6	58	2 0.7	2 1.1	2 1.5	.4	88	2.1	2.1	2.1
29	10 5.0	10 11.0	11 5.2	6.2	59	1 11.1	1 11.5	1 11.8	.3	89	1.8	1.8	1.8
30	9 11.4	10 5.0	10 10.9	5.9	60	1 9.6	1 9.9	1 10.1	.2	90	0 1.6	0 1.6	0 1.8
31	9 6.0	9 11.3	10 4.8	5.5	61	1 8.2	1 8.5	1 8.7	.2	91	1.4	1.4	1.4
32	9 0.6	9 5.5	9 10.7	5.2	62	1 6.8	1 7.1	1 7.3	.2	92	1.3	1.3	1.3
33	8 7.6	9 0.2	9 5.0	4.8	63	1 5.7	1 5.9	1 6.0	.1	93	1.2	1.2	1.2
34	8 2.6	8 6.8	8 11.3	4.5	64	1 4.4	1 4.6	1 4.7	.1	94	1.1	1.1	1.1
35	7 9.9	8 1.8	8 5.9	4.1	65	1 3.3	1 3.5	1 3.6	.1	95	0 1.0	0 1.0	0 1.2
36	7 5.2	7 8.9	8 0.7	3.8	66	1 2.2	1 2.4	1 2.5	.1	96	.8	.8	.8
37	7 0.8	7 4.2	7 7.7	3.5	67	1 1.2	1 1.4	1 1.5	.1	97	.7	.7	.7
38	6 8.4	6 11.6	7 2.9	3.3	68	1 0.3	1 0.4	1 0.4	.0	98	.3	.3	.3
39	6 4.4	6 7.3	6 10.3	3.0	69	0 11.4	0 11.5	0 11.5	.0				

FORMULA, for 4.311, 5.324, 6.337, or the rate of vs^2, $a_{u'u'} = a_{u'+c, u'+c}$, for 3, 4, 5 per cent. interest respectively, or the rate of v.

EQUALIZATION OF ANNUITY ELEMENTS.—In explanation of the preceding Tables, the single life annuity a_x, on page 240, is or may be resolved into the sum of products of elementary factors of the form vp_x. In like manner, the annuity a_{xy} on two lives, may be resolved into elementary factors of the form vp_xp_y; on three lives, into $vp_xp_yp_z$; and so on. In the logarithmic form of Makeham's law of mortality, from page 237, we find these *Annuity Elements:*

For a Single Life, $\qquad \lambda(vp_{x'}) = \lambda(vs) + q^{x'}(q-1)\lambda g.$

For Two Joint Lives, $\qquad \lambda(vp_xp_y) = \lambda(vs^2) + (q^x + q^y)(q-1)\lambda g.$

For Two Equal Lives, $\qquad \lambda(vp_up_u) = \lambda(vs^2) + (q^u + q^u)(q-1)\lambda g.$

For Three Joint Lives, $\quad \lambda(v'p_xp_yp_z) = \lambda(v's^3) + (q^x + q^y + q^z)(q-1)\lambda g,$ etc.

Now if $v = v's$, that is, $vs^2 = v's^3$; and $q^u + q^u = 2q^u = q^x + q^y + q^z$, the annuity element of three lives, x, y, z, with the rate v', evidently becomes equal to that of two equal lives, u, u, with the rate vs. Also the same element with the rate v' equals that

of the single age x' (defined by $q^{x'} = q^x + q^y + q^z$) with the rate vs^2. By the last two Tables giving the correction c, the true annuities first computed for the ages u, u, and rate vs, or vs^2, are more conveniently found through the ages $u + c$, $u + c$, and the rate of v.

METHOD FOR SIMPSON'S RULE ON PAGE 242.—For greater convenience, two Tables are here brought together; the first, from Table LXV. gives the Correction to change two joint lives to two equal ages, which does not involve the rate of interest. The second, computed from $a_{uu} = a_{u+c''}$, gives the correction c'' to change from two equal ages, u, u, to the equivalent single age, $u + c''$, which last depends on the rate of interest.

CORRECTION TO BE ADDED TO THE YOUNGER AGE FOR REDUCING TWO JOINT LIVES TO THE CASE OF TWO EQUAL AGES.

Diff. Ages.	0		1		2		3		4		5		6		7		8		9	
Yr.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.
	0	0.0	0	6.1	1	0.6	1	7.3	2	2.3	2	9.5	3	5.0	4	0.8	4	8.9	5	5.2
1	6	1.8	6	10.6	7	7.6	8	4.7	9	2.0	9	11.6	10	9.5	11	7.3	12	5.5	13	3.7
2	14	2.0	15	0.6	15	11.2	16	10.0	17	8.8	18	7.7	19	6.7	20	5.9	21	5.0	22	4.3
3	23	3.6	24	3.0	25	2.4	26	1.9	27	1.4	28	1.0	29	0.6	30	0.2	30	11.9	31	11.5
4	32	11.3	33	11.0	34	10.8	35	10.6	36	10.4	37	10.2	38	10.1	39	9.9	40	9.8	41	9.7
5	42	9.6	43	9.5	44	9.4	45	9.3	46	9.2	47	9.2	48	9.1	49	9.0	50	9.0	51	9.0
6	52	8.9	53	8.9	54	8.8	55	8.8	56	8.8	57	8.7	58	8.7	59	8.7	60	8.7	61	8.7
7	62	8.7	63	8.6	64	8.6	65	8.6	66	8.6	67	8.6	68	8.6	69	8.6	70	8.6	71	8.6

CORRECTION (c'') TO REDUCE TWO EQUAL AGES TO THE EQUIVALENT SINGLE AGE.—INTEREST 4 PER CENT.

Equal Ages.	0		1		2		3		4		5		6		7		8		9	
Yr.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.
1	21	5.2	20	10.7	20	4.3	19	10.0	19	3.9	18	10.0	18	4.2	17	10.6	17	5.2	16	11.9
2	16	6.8	16	1.8	15	9.0	15	4.3	14	11.9	14	7.5	14	3.3	13	11.3	13	7.4	13	3.6
3	13	.1	12	8.6	12	5.2	12	2.1	11	11.0	11	8.1	11	5.2	11	2.5	11	.0	10	9.5
4	10	7.2	10	4.9	10	2.8	10	.8	9	10.9	9	9.0	9	7.2	9	5.6	9	4.0	9	2.5
5	9	1.1	8	11.8	8	10.5	8	9.3	8	8.1	8	7.1	8	6.0	8	5.1	8	4.2	8	3.3
6	8	2.5	8	1.8	8	1.0	8	.3	8	11.7	7	11.1	7	10.5	7	10.0	7	9.4	7	8.9
7	7	8.4	7	8.0	7	7.5	7	7.0	7	6.4	7	5.8	7	5.2	7	4.4	7	3.4	7	2.2
8	7	.5	6	10.4	6	7.6	6	4.8	6	2.5	6	0.9	5	11.4	5	10.1	5	9.2	5	8.2
9	5	7.6	5	3.8	4	11.6	4	6.1	3	9.5	3	1.0	2	3.8	....		....		....	

Thus for two Equal Ages of 38 years each, the 4 per cent. annual correction additive, is 11 Y., giving the equivalent single Age 49 Years. Ten years after this, the equivalent single age for finding the life annuity will be 48 Y. + 9 Y. 4 M., or 57 Y. 4 M.

For a rate (i) of Interest other than 4 per cent.—First find the 4 per cent. correction c'', and re-enter the Table with the corrected argument $u + 10(.04 - i)c''$, which will guide to the correction sought. Here $10(.04 - i)c''$ is for 3 per cent. $+ \frac{1}{10}c''$; 3½ per cent. $+ \frac{1}{20}c''$; 4½ per cent. $- \frac{1}{20}c''$; 5 per cent. $- \frac{1}{10}c''$; 6 per cent. $- \frac{1}{5}c''$.

14. SURVIVORSHIP INSURANCES.

Required the single premium to insure $1, to be received at the end of the year in which x dies, provided another life y be then living. This is sometimes termed the insurance of "x against y."

The probability of receiving the $1 at the end of any specified year, as the second, depends on the probability $\dfrac{l_{x+1}}{l_x} \cdot \dfrac{l_{y+1}}{l_y}$ that both are alive at the beginning of the year, multiplied into the sum of the two probabilities, (1) that x may die in said second year

and y survive through it, or $(1-p_{x+1})\,p_{y+1}$. (2) that both may die in the second year, x dying first, or $\frac{1}{2}(1-p_{x+1})\,(1-p_{y+1})$. This last expression is multiplied by $\frac{1}{2}$, since it is considered an even chance for so short a period as one year, whether x or y will die first, whatever be the difference of their ages.

The sum of (1) and (2) is $\frac{1}{2}(1-p_{x+1})\,(1+p_{y+1})$, or $\frac{1}{2}\left(1-\frac{l_{x+2}}{l_{x+1}}\right)\left(1+\frac{l_{y+2}}{l_{y+1}}\right)$. And the product of this sum by the previous factor and by v^2 gives the second term of the series or formula for the single premium :

$$A_{\overline{xy}}^1 = \frac{l_x - l_{x+1}}{l_x} \cdot \frac{l_y + l_{y+1}}{2l_y} \cdot v + \frac{l_{x+1} - l_{x+2}}{l_x} \cdot \frac{l_{y+1} + l_{y+2}}{2l_y} \cdot v^2 + \dots .$$

In this notation for A, the 1 written over the x, expresses the condition that x is to die before y; otherwise the insurance is void. Performing the multiplications indicated, we have

$$A_{\overline{xy}}^1 = \frac{1}{2l_x l_y}\,[(l_x l_y - l_{x+1}l_{y+1} + l_x l_{y+1} - l_y l_{x+1})v$$
$$+ (l_{x+1}l_{y+1} - l_{x+2}l_{y+2} + l_{x+1}l_{y+2} - l_{y+1}l_{x+2})v^2$$
$$+ \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots].$$

This expression can be resolved into three simpler series, as shown on page 184 of Milne's treatise. Thus, the sum of the terms characterized by the first factor $l_x l_y - l_{x+1}l_{y+1}$ is identical with the half joint life premium $\frac{1}{2}A_{xy}$. The factor $l_x l_{y+1}$ is a type of the next series, which being multiplied and divided by $l_{x-1}l_y$, takes the form of $\frac{1}{2}a_{x-1.y} \div p_{x-1}$. And the remaining series is like it; so that

$$A_{\overline{xy}}^1 = \frac{1}{2}\left(A_{xy} + \frac{a_{x-1.y}}{p_{x-1}} - \frac{a_{x.y-1}}{p_{y-1}}\right).$$

$$A_{\overline{xy}}^1 + A_{\overline{xy}}^1 = A_{xy} ; \qquad A_{\overline{xx}}^1 = \frac{1}{2}A_{xx}.$$

When x and y are both of the same age, the expression is thus simplified by the evident cancelling of the last two terms. Also, by changing each term into the *Commutation notation*, and observing that $\sqrt{v}\,.\,p_{x-1}D_{x-1.y} = D_{xy}$, we verify the formula already given on page 248, Note 1, for the single and the annual premium.

Another formula can be obtained by substituting the middle value $l_{y+\frac{1}{2}}$ in place of $\frac{1}{2}(l_y + l_{y+1})$, and so forth, in the primary formula, which will be sufficiently exact. The coefficient of v divided by $l_x l_y$, thus becomes $(l_x - l_{x+1})l_{y+\frac{1}{2}}$, or $l_x l_{y+\frac{1}{2}} - l_{x+1}l_{y+\frac{1}{2}}$, the result for the first year. And the sum of the series for the first and following years, will be, if $\frac{l_{y-\frac{1}{2}}}{l_y}$ is replaced by $\sqrt{\dfrac{1}{p_{y-1}}}$:

$$A_{\overline{xy}}^1 = \sqrt{\frac{1}{p_{y-1}}} \cdot \left(\frac{a_{x-1.y-\frac{1}{2}}}{p_{x-1}} - a_{x.y-\frac{1}{2}}\right).$$

Example.—Let $x = y = 35$ years, with interest 4 per cent. The equal ages to give the two annuities, are found by Table LXV to be $34\frac{1}{4}$ and $34\frac{3}{4}$ years, for entering Table LXXII. And the logarithm of the radical factor is $\frac{1}{2}$ of 0.003500 found in Table XXVII. Completing the calculation, we find the single premium 0.21416 on each $1 insured. Verification is obtained by the previous formula, which gives $\frac{1}{2}A_{35.35} = .21408$; and this appears a trifle more exact than the result above, which depends substantially on the difference of annuities tabulated to three or four decimals. Dividing the single premium by $1 + a_{xy}$, that is, by $1 + a_{35.35}$ or by 14.8678, gives the *annual premium* 0.014399 on each $1 insured.

Changing now the last formula, or rather its previous series, into the notation of De Morgan and of Chisholm, we may find the values of D, N, in the Tables for Two

Joint Lives, or the values of D, N, S, in the Tables of Single Life, entered with the equivalent single age from page 259, and thence the value of $M^1_{\overline{xy}}$ or $R^1_{\overline{xy}}$ below:

$$A^1_{\overline{xy}} = \frac{M^1_{\overline{xy}}}{D_{xy}}; \quad M^1_{\overline{xy}} = (l_x - l_{x+1})(l_{y+\frac{1}{2}})v^{\frac{x+y+2}{2}} + (l_{x+1} - l_{x+2})(l_{y+1\frac{1}{2}})v^{\frac{x+y+4}{2}} + \ldots$$

$$R^1_{\overline{xy}} = M^1_{\overline{xy}} + M^1_{\overline{x+1.y+1}} + M^1_{\overline{x+2.y+2}} + \ldots$$

$$M^1_{\overline{xy}} + M^1_{\overline{xy}} = M_{xy}; \qquad R^1_{\overline{xy}} + R^1_{\overline{xy}} = R_{xy}.$$

$$M^1_{\overline{xy}} = v^{\frac{3}{4}}N_{x.y+\frac{1}{2}} - v^{\frac{1}{4}}N_{x+1.y+\frac{1}{2}}; \quad R^1_{\overline{xy}} = v^{\frac{3}{4}}S_{x.y+\frac{1}{2}} - v^{\frac{1}{4}}S_{x+1.y+\frac{1}{2}}.$$

Insurance of \$1 on the life of x, if y be the survivor:

$$\text{Single Premium,} \quad A^1_{\overline{xy}} = \frac{M^1_{\overline{xy}}}{D_{xy}}; \qquad \text{Annual Premium} = \frac{M^1_{\overline{xy}}}{N_{xy}}.$$

Insurance of \$1 on the life x, if y be the survivor, with return of net premium or premiums paid, if y die first:

$$\text{Single Premium,} \quad \frac{M^1_{\overline{xy}}}{D_{xy} - M^1_{\overline{xy}}}; \qquad \text{Annual Premium} = \frac{M^1_{\overline{xy}}}{N_{xy} - R^1_{\overline{xy}}}.$$

Insurance of \$1 on the life of x, provided he die last of the two lives x, y:

$$\text{Single Premium} = A_x - A^1_{\overline{xy}}; \qquad \text{Annual Premium} = \frac{A_x - A^1_{\overline{xy}}}{1 + a_{xy}}.$$

Insurance of \$1 upon the life x, deferred n years, and contingent upon y surviving that term:

$$\text{Single Premium} \quad = \frac{M_{x+n}}{D_x} \cdot \frac{l_{y+n}}{l_y}; \qquad \text{Annual Premium} = \frac{M_{x+n} l_{y+n}}{D_x l_y (1 + a_{xy})}.$$

Deferred and Temporary Survivorship Insurances.—For the single premium of the contingent insurance *deferred* n years, and of the *temporary* insurance during n years, we have respectively,

$$_nA^1_{\overline{xy}} = \frac{D_{x+n.y+n}}{D_{xy}} \cdot A^1_{\overline{x+n.y+n}}.$$

$$A^n{}^1_{\overline{xy}} = A^1_{\overline{xy}} - {_n}A^1_{\overline{xy}} = A^1_{\overline{xy}} - \frac{D_{x+n.y+n}}{D_{xy}} \cdot A^1_{\overline{x+n.y+n}}.$$

The divisor to give the annual premium will be 1 plus the temporary annuity on the joint lives for one year less than the whole period of payment.

Attention has been called to this advantageous method of determining the single premium of deferred or of temporary insurances, by Mr. Peter Gray, who states that it applies to all insurances, depending on the first death from among any assigned number of lives. The commutation formula for temporary annuities will furnish another illustration. An equation between two or more benefits is first presupposed. Then by transposition, or solution, each benefit may be expressed in terms of the others.

GENERAL SOLUTION.—For the more general case of an insurance of $1, payable at the end of the year of first death among the (m) lives $x', x'', x''', \ldots$ provided all the other (n) lives $y', y'', y''', \ldots$ are then surviving, Mr. Makeham has given a strikingly original formula in the *Journal*, vol. 9, page 362, reproduced by Mr. Woolhouse in vol. 15, page 403. First, two auxiliary single ages x, y, are to be found such that,

$$q^x = q^{x'} + q^{x''} + q^{x'''} + \ldots; \qquad q^y = q^{y'} + q^{y''} + q^{y'''} + \ldots$$

The logarithms of q and s are given on page 237; and that of δ or $-\log v$, at the end of Table XLIII. As usual, $\mathrm{A}_{x'. \, y'..}$ will denote the ordinary single premium of insurance on all the joint lives. Multiplying by $\sqrt{v}$ in order to change from "continuous" to ordinary premiums, we find the formula equivalent to

$$\mathrm{A}_{\overline{(x'x''..)y'y''..}}^{\,1} = \frac{mq^y - nq^x}{q^x + q^y} \left\{ \frac{\sqrt{v}}{\delta} \cdot \log \frac{1}{s} - \left(\frac{1}{m+n} + \frac{1}{\delta} \cdot \log \frac{1}{s} \right) \mathrm{A}_{x'..y'..} \right\} + \frac{m}{m+n} \, \mathrm{A}_{x'..y'..}$$

For the simplest case, that of an insurance payable after the death of x, provided y survives him, we have $m = n = 1$. And first, if x be the *younger* life, with interest 4 per cent.

$$\mathrm{A}_{\overline{xy}}^{\,1} = \frac{q^{y-x} - 1}{q^{y-x} + 1} \, (0.158117 - 0.661249 \mathrm{A}_{xy}) + \tfrac{1}{2} \mathrm{A}_{xy}.$$

$$\mathrm{A}_{\overline{xy}}^{\,1} = a' + b' \mathrm{A}_{xy}. \qquad \lambda \log \frac{1}{s} = \overline{3}.801012; \qquad \lambda \sqrt{v} = \overline{1}.991483.$$

Here a' denotes the first term, and b' the whole coefficient of A_{xy}. To facilitate calculation, their values are sketched in the following Table. The Italic n is annexed to the logarithm, when the number b' is negative. When x is greater than y, q^x will exceed q^y in the general formula; hence if x be the *older* of the two lives, and if the difference of ages is accounted positive,

$$\mathrm{A}_{\overline{xy}}^{\,1} = -a' + (1 - b') \, \mathrm{A}_{xy}.$$

VALUE OF a' AND $\lambda b'$ ACCORDING TO THE DIFFERENCE OF AGES. INTEREST 4 PER CENT.

Diff. Ages.	a'.	$\lambda b'$.	Diff. Ages.	a'.	$\lambda b'$.	Diff. Ages.	a'.	$\lambda b'$.	Diff. Ages.	a'.	$\lambda b'$.
1	0.00751	$\overline{1}$.67080	13	0.08690	1.13536	25	0.13124	$\overline{2}$.68871n	37	0.14900	$\overline{1}$.09030n
2	.01499	.64079	14	.09201	.06150	26	.13348	.76515n	38	.14980	.10202n
3	.02239	.60891	15	.09684	2.97774	27	.13556	.82546n	39	.15054	.11246n
4	.02970	.57494	16	.10140	.88044	28	.13747	.87449n	40	.15121	.12178n
5	.03688	.53878	17	.10569	.76339	29	.13923	.91520n	41	.15182	.13012n
6	.04390	.50023	18	.10972	.61445	30	.14085	.94956n	42	.15238	.13760n
7	0.05074	1.45908	19	0.11349	2.40475	31	0.14234	2.97889n	43	0.15290	$\overline{1}$.14431n
8	.05738	.41505	20	.11701	.02821	32	.14370	1.00418n	44	.15336	.15034n
9	.06379	.36781	21	.12029	$\overline{3}$.48477n	33	.14496	.02615n	45	.15379	.15577n
10	.06996	.31690	22	.12334	$\overline{2}$.19920n	34	.14610	.04535n	46	.15418	.16066n
11	.07587	.26176	23	.12618	.44206n	35	.14715	.06222n	47	.15453	.16507n
12	.07974	.22151	24	.12880	.58729n	36	.14812	.07711n	48	.15485	.16905n

Example.—Required the single premium on each $1 of insurance payable after the death of x aged 17, if y, now aged 57, shall then be living. Interest 4 per cent.

$$\mathrm{A}_{\overline{17.57}}^{\,1} = 0.15121 - [\overline{1}.12178] \, \mathrm{A}_{17.57} = 0.07574..$$

Here the difference of ages, 40 years, gives the Equal Ages 49 Y. 11.3 M.; whence by Table LXXIV, $\mathrm{A}_{17.57}$ is .57016 on $1, for the remaining operation, with a' and $\lambda b'$ at $(x - y)$ 40 years. The former approximation by annuities verifies the answer 0.07575.

15. INSURANCES PAYABLE AT THE INSTANT OF DEATH.

The received system of premiums assumes the sum insured to be paid at the end of the year of death; that is, on the average, six months after death. Hence, if the sum insured (s) were paid at the instant of death, it would be increased at the year's end by six months' interest, that is, by the factor $\left(1+\dfrac{i}{2}\right)$, or the divisor $\sqrt{v}$ according to some writers, where i denotes the yearly rate of interest. If the common insurance s is to be thus increased to $s\left(1+\dfrac{i}{2}\right)$, the premiums should be increased in the same ratio, that is, by adding 6 months' interest, or by the factor $1+\dfrac{i}{2}$. By similar reasoning, if the insurance is to be paid three months after death, that is, on the average, three months before the expiration of the year of death, then 3 months interest should be added to the premium, whether the premium be single, annual, or by other installments. The factor $\left(1+\dfrac{i}{4}\right)$ will make this last addition; which illustrates the process for other cases.

It will be proper to add, that a three months increase is more commonly included in the "loading" of the office premiums. The subject is more fully analyzed in the "continuous method," which assumes all insurances to be payable at the instant of death.

16. SEMI-ANNUAL AND QUARTERLY PREMIUMS.

According to Mr. Woolhouse in the *Assurance Magazine*, Vol. XI, page 327; in official practice, it is a safe and convenient rule to take the yearly premium a year higher when one-fourth of it is to be paid quarterly, and half a year higher when one-half of it is to be paid half-yearly. This will rather more than cover the true calculation, as it should do to provide for the additional cost. Rigorously, if π denote the annual premium on \$1 insured for life, and π' the increased value when payable in m instalments, it is there proved that

$$\pi' = \frac{\pi}{1-(1-v+\pi)\left[\dfrac{m-1}{2m}+\dfrac{m^2-1}{12m^2}(\mu+\delta)\right]}. \quad \text{Table XLIII.}$$

SECTION VII.

Reserve or Valuation of Policies.

The annual changes of Reserve or Net Value are exemplified in the common life policy. By Table LXIII, at the age of entry 46 years, the net Annual Premium is \$28 on \$1000 insured; and the Reserve for different Durations, or Policy Years, as the annual premiums are paid, will be as follows:

Policy Years.	1st.			2nd.			3rd.			Etc.
Duration Years. . . .	0	$0\frac{1}{2}$	1	1	$1\frac{1}{2}$	2	2	$2\frac{1}{2}$	3	. . . .
Premiums paid	28.00			28.00			28.00			. . . .
Net Value	28.00	22.82	17.64	45.64	40.66	35.68	63.68	58.89	54.10	. . . .

At the beginning of the insurance, the Net Value is equal to the Premium paid: the risk of death incurred during the following twelve months, continually decreases this value till the close of the first year. Then the premium paid at the beginning of the second year, carries up the Reserve *per saltum* to a much higher point; when the twelve months decrease again commences; and so on.

In the case of paid-up Policies, the Net Reserve changes continuously; either *by increase*, as in Table XXXI, for whole life policies; or by *decrease*, as in Table LII, where the Single Premium at the age of 24 is $36.86, and at the age of 25 it is $31.58, on an Insurance of $1000 terminating at the age of 30.

MONTHS AND DAYS.

The decrease of Net Value from the beginning to the end of each policy year, is conventionally assumed to be *uniform*. For example, when a policy has been in force 5 years and 4 months, the decrease in the 4 months is one-third of the whole decrease between the beginning and the end of the 6th policy year. Or multiply the tabular difference for the mean half-month ($\frac{1}{2}m.\ d.$) by double the number of months. And for odd days, take proportional parts of ($\frac{1}{2}m.\ d.$) representing 15 days. That is, account 1 day as $\frac{1}{15}$ or $\frac{2}{30}$, and 2 days as $\frac{4}{30}$, also 3 days as $\frac{1}{5}$ or $\frac{2}{10}$, and 6 days as $\frac{4}{10}$, also 9 days as $\frac{6}{10}$, and 12 days as $\frac{8}{10}$; also 5 days as $\frac{1}{3}$, and 10 days as $\frac{2}{3}$. The correction will be added or subtracted according to increase or decrease of the tabular Reserve. Other modes of proportional correction will be indicated in Tables LXIII and LXXIV.

VALUATION TABLES FOR PAID-UP POLICIES.

At every age, the Net Value evidently coincides with the Single Premium, for the unexpired term of the same species of insurance. Single Premiums will be found already computed in Tables XXX, XXXI; by Months in Tables L, LI; for Term and Endowment Insurances, Tables LII, LIV; and for Joint Lives in Table LXXIV.

ANNUAL PREMIUM POLICIES.

PROSPECTIVE FORMS OF NET VALUATION.—The general principle is simply, from the net single premium, of the given species, at the age of valuation, to deduct the present value of the future net annual premiums receivable.

Let *s* denote the sum insured, and P_x the annual premium thereon, at the age of entry *x*. At the end of the *n*th policy year, or at the age $x+n$, when the next annual premium is just due but unpaid, the Net Value of a common life policy will be, if A_{x+n} denote the net single premium on each $1 insured,

$$V_{x+n} = s \cdot A_{x+n} - P_x(1+a_{x+n}),$$

If the premium has just been paid, by adding it, and accenting **V,**

$$V'_{x+n} = s \cdot A_{x+n} - P_x \cdot a_{x+n}.$$

When the valuation is made by the same table of mortality and rate of interest with the premium, the former expression will be simplified by substituting for A, P, their equivalents in terms of *v, a*; the result is, on each $1 insured,

$$V_{x+n} = 1 - \frac{1+a_{x+n}}{1+a_x} = \frac{a_x - a_{x+n}}{1+a_x}; \qquad V'_{x+n} = v - \frac{a_{x+n}}{1+a_x};$$

$$V_{x+n} = 1 - \frac{1 - A_{x+n}}{1 - A_x} = 1 - \frac{P_x + 1 - v}{P_{x+n} + 1 - v}.$$

In the case of two joint lives,

$$V_{x+n.y+n} = 1 - \frac{1 + a_{x+n.y+n}}{1 + a_{xy}}.$$

And on the survivor of two lives,

$$V_{\overline{x+n.y+n}} = 1 - \frac{1 + a_{x+n} + a_{y+n} - a_{x+n.y+n}}{1 + a_x + a_y - a_{xy}}.$$

By another mode of reasoning, if P_{x+n} denote the annual premium at the advanced age $x+n$, then the difference $P_{x+n} - P_x$ measures the annual saving in premium of the former policy over an assumed new policy. The present value of these savings will of course be the present value of the former policy; that is, if the premium is just due, but not paid,

$$V_{x+n} = (P_{x+n} - P_x)(1 + a_{x+n}).$$

RULE.—Take the difference between the net annual premium, which would be required at the advanced age, and the net annual premium charged in the policy, multiply it by unity added to the value of the annuity at the advanced age of the life insured; the product will be the Reserve.

The last formula is equal to the first one, since $A_{x+n} = P_{x+n}(1 + a_{x+n})$. Again, since $A_{x+n} = 1 - (1 - v)(1 + a_{x+n})$, we have from the first formula on page 265 :

$$V_{x+n} = 1 - (1 - v + P_x)(1 + a_{x+n}),\text{ on each \$1 insured.}$$

By proper change of the annuity, as noted above, this formula will likewise apply to two joint lives, or to the survivor of them.

On all *Temporary* and on *Endowment Insurances* of \$1 insured for the term of m years, after the age of entry x, the Reserve at the intermediate age $x+n$, when the next premium is just due but unpaid, will be

$$V_{x+n} = A_{x+n}^{m-n} - P_x(1 + a_{x+n}^{m-n-1}).$$

Here A denotes the single premium of the given species of policy, and a the temporary annuity at the age $x+n$ for the remaining $m-n$ years. The same Reserve with the annuity expressed in commutation terms, will be

$$V_{x+n} = A_{x+n}^{m-n} - P_x \cdot \frac{N_{x+n} - N_{x+m}}{D_{x+n}}.$$

The value of an Endowment Insurance for m years, with premiums payable annually, may be simplified like that of the common life policy, as follows :

$$V_{x+n} = 1 - \frac{1 + a_{x+n}^{m-n-1}}{1 + a_x^{m-1}} = 1 - \frac{N_{x+n} - N_{x+m}}{N_x - N_{x+m}} \cdot \frac{D_x}{D_{x+n}}.$$

VALUATION BY GROSS PREMIUMS.—Let P_x denote the net annual premium on any policy, and P'_x the loaded, gross, or office premium. Then will the difference between the *gross* and the *net* valuation be expressed by

$$(P'_x - P_x)(1 + a_{x+n}^{m-n-1}),\text{ or }(P'_x - P_x)\frac{N_{x+n} - N_{x+m}}{D_{x+n}}$$

This is the present value of the loading receivable in the future. Since many policies will be discontinued, it belongs to the uncertain or "unrealized assets;" which, as they accrue, may be the material of future dividends. In the early years of life insurance in the United States, the Carlisle 4 per cent. mutual premiums were loaded 35 per cent.

RETROSPECTIVE FORMS OF NET VALUATION.

In apparent contrast with " Prospective Valuation" which has just been shown to be based on the present single premium, and on future annual premiums, "Retrospective Valuation" is based only on past premiums already received. Yet by a singular coincidence, *in net valuation*, the Reserve found by the first method, from premiums future and unpaid, is precisely the same as the Reserve of the second method from premiums past and paid. This will be the more evident from the direct transformation of Prospective formulas into Retrospective. Let us take, for example, the Prospective formula, giving the Reserve at the end of 6, or more generally, n years, on a ten-premium life policy for \$1 insured:

$$V_{x+n} = \frac{M_{x+n}}{D_{x+n}} - \frac{M_x}{N_x - N_{x+10}} \cdot \frac{N_{x+n} - N_{x+10}}{D_{x+n}}.$$

Substituting for M_{x+n} its equal, $M_x - (M_x - M_{x+n})$,

$$V_{x+n} = \frac{M_x}{D_{x+n}} \left(1 - \frac{N_{x+n} - N_{x+10}}{N_x - N_{x+10}}\right) - \frac{M_x - M_{x+n}}{D_{x+n}}.$$

$$V_{x+n} = \frac{P_x (N_x - N_{x+n}) - (M_x - M_{x+n})}{D_{x+n}}.$$

Here the premium $P_x = \dfrac{M_x}{N_x - N_{x+10}}$; and the formula now involves no future age, but only the past or retrospective ages x and $x+n$; hence the name of *Retrospective Formula*, proposed in the original memoir by James Meikle, *Journal*, Vol. XI, p. 245.

If T_x^n denote the annual premium of Temporary Insurance, and E_x^n that of Pure Endowment, for n years; then dividing both numerator and denominator of the formula by $N_x - N_{x+n}$, and substituting equivalents, we have the second form, on each \$1 insured:

$$V_{x+n} = \frac{P_x - T_x^n}{E_x^n}.$$

By substituting for M_x its equal $D_x - (1-v) N_x$, and so for M_{x+n}, we obtain a third form; and then by substituting $\pi_x + (1-v) N_x$ for its equal D_x, the fourth form following:

$$V_{x+n} = \frac{(P_x + 1 - v)(N_x - N_{x+n}) - (D_x - D_{x+n})}{D_{x+n}}.$$

$$V_{x+n} = \frac{(P_x - \pi_x) N_x - (P_x + 1 - v) N_{x+n}}{D_{x+n}} + 1.$$

By an obvious modification, we obtain a fifth and more general formula, which includes the single premium and others:

$$V_{x+n} = \frac{b_x . D_x + b_{x+1} . D_{x+1} + \ldots - s(M_x - M_{x+n})}{D_{x+n}}.$$

Here each annual payment b_x, b_{x+1}, ... (which may be negative), is treated as a single premium of pure endowment, due at the age of valuation $x+n$. The sum of these terms, less the cost of temporary insurance of s from age x to the age $x+n$, gives the required reserve or net value. All the retrospective formulas, coinciding entirely with the principle here stated, require no further demonstration.

ELEMENTARY FORMULA OF VALUATION.

Let s_x denote the amount of insurance in force during the 1st year; s_{x+1} the amount during the 2d year: s_{x+2} during the 3rd year; etc. The years are past, but at the age x, the series may be resolved into deferred temporary insurances of one year each; so that the factors to give their present values, would be $\dfrac{M_x - M_{x+1}}{D_x}$, $\dfrac{M_{x+1} - M_{x+2}}{D_x}$, ... And the common factor to change these present values to equivalent endowments or reserve, at the age $x+n$, will be $\dfrac{D_x}{D_{x+n}}$. So that on cancelling D_x, and writing C_x, C_{x+1}, ..., for the differences of M,

$$(E) \qquad V_{x+n} =$$

$$\frac{b_x \cdot D_x + b_{x+1} \cdot D_{x+1} + \dots + b_{x+n-1} \cdot D_{x+n-1} - s_x \cdot C_x - s_{x+1} \cdot C_{x+1} - \dots - s_{x+n-1} \cdot C_{x+n-1}}{D_{x+n}}.$$

RETURN PREMIUMS.—For application, let P_x denote the net annual premium to insure a sum s; and let P'_x denote each of the total premiums, whether gross or net, to be returned without interest, at the end of the year of death, with the sum insured. Then by the last formula (E), and by Sect. V, the net reserve will be

$$V_{x+n} = \frac{P_x (N_x - N_{x+n}) - (s + P'_x) C_x - (s + 2P'_x) C_{x+1} - \dots - (s + nP'_x) C_{x+n-1}}{D_{x+n}}$$

$$= \frac{P_x (N_x - N_{x+n}) - s (M_x - M_{x+n}) - P'_x (R_x - R_{x+n} - nM_{x+n})}{D_{x+n}}.$$

NOTE.—For a Pure Endowment, with return of all premiums only in the event of death, let s be made 0, in the last formula.

INCREASING OR DECREASING INSURANCES.—If $s + P' = I$, the sum insured during the first year; or $s = I - P'_x$, and P'_x the annual increase, the formula (E) will give the net value of any *increasing* insurance. Or by changing the sign of P', it will give the value of a *decreasing* insurance, provided $s - P'_x = I$, denote the sum insured during the first year; whence $s = I + P'_x$.

INCREASING OR DECREASING PREMIUMS.—By the general formula, if $P + h$ denote the first net annual premium, and h its annual increment, so that $P + h$, $P + 2h$, ... $P + nh$, are the annual payments, by reference also to Sect. V,

$$V_{x+n} = \frac{P_x (N_x - N_{x+n}) + h (S_x - S_{x+n} - nN_{x+n}) - s (M_x - M_{x+n})}{D_{x+n}}.$$

By making h negative, and determining P from the relation $P - h = b$, the first annual premium, or $P_x = b_x + h$; this formula will apply to decreasing premiums.

VALUATION TABLES FOR ANNUAL PREMIUM POLICIES.

The Net Value or Reserve on Ordinary Life Policies of $1000 is given in Table LXIII, for the middle and the end of each year, with half-monthly differences for interpolation. The similar values for Ten Payment Life Policies are computed in Table LXII. For other species, such as Limited Premium Life, Term and Endowment Insurances, on the plan of an average annual premium, the several Tables which give this premium P, give also the auxiliary $\lambda\,(P-\pi)$. And the mode of applying this auxiliary to give the Reserve, is fully described at the beginning of Table LXIII, on Page *154. The formula there given for the " End of Policy Year " is thus found:

Let π_x denote the Annual Premium of the Ordinary Life Policy on $1000, at the age x; then by the preceding first form of Retrospective Valuation:

$$V = \frac{\pi_x\,(N_x - N_{x+n}) - 1000\,(M_x - M_{x+n})}{D_{x+n}}.$$

And let P_x denote the Annual Premium of a different species of Policy on $1000 issued at the same age x. Writing the similar Retrospective Formula of V_{x+n}, and taking the difference of the two equations, also transposing V, we obtain the formula required, for the end of the nth Policy Year:

$$V_{x+n} = V + (P_x - \pi_x)\frac{N_x - N_{x+n}}{D_{x+n}} = V + (P_x - \pi_x)\,B_x^n.$$

The Retrospective Formula has peculiar advantages: firstly, in that the computer knowing the annual premium P, is exempt from the trouble of inquiring into the year of termination of temporary and endowment insurances. Secondly, in showing that the Reserve from premiums past and paid, is the same as from premiums future and unpaid. And thirdly, the use of five place logarithms in computation, generally gives the same degree of accuracy in the result, as six place logarithms with the older prospective formulas.

ADJUSTMENT FOR MONTHS. TABLES LXIII AND LXIV. Let V_{x+n} denote the Reserve at the age $x+n$ just before the annual premium falls due; and let $V' = P_x + V_{x+n-1}$ denote the Reserve twelve months previous, just after the current premium was paid. Then, as will presently be shown in Section IX, for each $1 insured:

$$V_{x+n} = 1 - \frac{1}{v\,p_{x+n-1}}\,(v - V').$$

Let h denote the fraction of the year elapsed since the date of V'; and let V_{x+n}^h denote the Reserve at that time. Then by proportional decrease since the beginning of the year:

$$V_{x+n}^h = V' - h\,(V' - V_{x+n}) = (1-h)\,V' + h V_{x+n}.$$

Eliminating V' by comparison of the two equations, we have, on each $1 insured

$$V_{x+n}^h = (1-h)\,(v - v p_{x+n-1}) + V_{x+n}\,[h + (1-h)\,v p_{x+n-1}].$$

Let $f = h + (1-h)\,v p_{x+n-1}$. For V_{x+n}, let its former equal $V + (P_x - \pi_x)\,B_x^n$ be here substituted. Then observing that the $(1-h)\,(v - v p_{x+n-1}) + V f$ denotes the

interpolated value of the ordinary Life Policy, hereafter denoted simply by V, we find, for each $1000 insured, as on page *154, or Table LXIII:

$$V_{x+n}^{h} = V + (P_x - \pi_x)\, B_x^n f_{x+n}^{h}.$$

The last equation but one, may be transformed, by substituting for V_{x+n} its equal $(V_{x+n} - 1) + 1$; thus we obtain another formula when V_{x+n} is known:

$$V_{x+n}^{h} = h + (1-h)\,v - (1 - V_{x+n})f = f' - (1 - V_{x+n})f.$$

$$f' = h + (1-h)\,v\,;\qquad f = h + (1-h)\,v p_{x+n-1}.$$

The value of f' and the common logarithm of f, for 4 per cent., are given in Table LXIV, for the beginning and middle of each year, and the middle of each month. Intermediate values can be found from these by proportioning the differences. Like the last valuation formula, f' is adapted to 1 or unity, as the amount insured on a single life. By changing the decimal point three places to the right in the final result for $1, it will be adapted to $1000 insured or the value of f'' below. It may be proper to observe in the preceding expressions, that the exponent n or h is merely an extension of the suffix under it; V_{x+n}^{h} meaning the same as V_{x+n+h}.

VALUATION TABLES FOR JOINT LIFE POLICIES.

It will be advantageous to apply the correction to give *two* equal ages, at the time of entry, by first taking account of months, and applying the correction from page 260, or from Table LXV, so far as to determine the nearest integral age for the Office Equal Age. All future calculations on the Policy, can then be made by single entry in the Tables LXV–LXXVI, in the same manner as for a single life. In the case of three or four joint lives, the method of current " equal ages " with an Annual Correction (*c*) for calculations only, has been given on pages 258, 259.

Paid-up Policies on Two Joint Lives admit of Valuation by inspection or interpolation in Table LXXIV. On Annual Premium Policies, the Reserve can be calculated from the single entry factors in Table LXXVI, when the net Premium has been prepared, as illustrated in Table LXXV. The formula of valuation having precisely the same form as for a single life, is demonstrated as follows:

Substituting the expression for V_{x+n}, from the fourth form of Retrospective Valuation, into the preceding formula containing f' and f, we obtain on $1 insured:

$$V_x{}^h{}_n = f' + \frac{f}{D_{x+n}}\,[(P_x - \pi_x)\,N_x - (P_x + 1 - v)\,N_{x+n}].$$

Assuming P_x, π_x, to be premiums on $1000 insured, and adjusting the other terms accordingly, let f'' hereafter denote the former $1000f'$. Let the former $f \div D_{x+n} = b_{x+n}$; and let $b'_{x+n} = b_{x+n}N_{x+n}$. Also let the prepared premiums $P'_x = (P_x - \pi_x)\,N_x$; $P''_x = P_x + 1000\,(1 - v)$. Then as computed in Tables LXXV and LXXVI:

$$V_{x+n}^{h} = f'' + P'_x \cdot b_{x+n} - P''_x \cdot b'_{x+n}, \text{ on } \$1000 \text{ insured.}$$

Example 1.—An ordinary Policy issued on the Joint Lives aged 37 and 37 has been in force 5 years $4\frac{1}{2}$ months. Required the 4 per cent. Reserve.

$$1.84012 = \lambda P''_{37}\,,\ \text{Table LXXV.}$$

$$f'' = 975.962 \qquad 1.09963 = \lambda b_{42}^{h}\,,\ \text{Table LXXVI.}$$

$$-870.46 \qquad ....2.93975 \quad \text{Sum,}\ \text{Table LXXXII.}$$

$$\$105.50 = \text{Reserve on } \$1000 \text{ Insured.}$$

Example 2.—A Ten Payment Policy on two Joint Lives was issued at the ages of entry 43 and 43. Required the 4 per cent. Reserve at the end of 8 years $7\frac{1}{2}$ months.

$$6.76553 = \lambda P'_{43}, \quad 2.01450 = \lambda P''_{43}, \text{ Table LXXV.}$$

$f'' = 985.577 \qquad \overline{4.01727} = \lambda b^h_{51}, \quad \underline{1.01345} = \lambda b'^h_{51}, \text{ Table LXXVI.}$

$+606.46 \quad \ldots .2.78280 \qquad \ldots .3.02795 \quad \text{ Sums, Table LXXXII.}$

-1066.50

$\overline{\$525.54} = $ Reserve on $1000 Insured.

VALUE OF A SURVIVORSHIP INSURANCE.—At the end of n years, the annual premium P being just due but unpaid, the Reserve on a Policy of $1 payable on the death of x, provided y be then living, will be

$$\text{Reserve} = A\frac{1}{x+n.y+n} - P\left(1 + a_{x+n.y+n}\right) = (a' + b')\left(1 - \frac{1 + a_{x+n.y+n}}{1 + a_{xy}}\right),$$

$$= (a' + b') \times \text{Reserve on Ordinary Joint } x, y, \text{ at the end of } n \text{ years.}$$

This expression is based on the Single Premium $a' + b'A_{xy}$; and a', b', being constant during the continuance of the same Policy, are tabulated on page 263. The age x is presupposed to be younger than y. When x is the older age, a', b', must be replaced by $-a'$ and $1 - b'$ respectively, in all the expressions. These formulas, first investigated in the present collection, depend on the comparison of different expressions for equal reserves.

To correct for *Months*, whether the insurance be for the whole *Life*, or *Temporary*, let V denote the Reserve on 1000, computed from Table LXXVI, as if for ordinary Joint Lives, or for the same term, if Temporary; then, on the corresponding Survivorship Policy:

$$\text{Reserve} = (a' + b')\, V + a'\, (1000 - f'').$$

Insurance of $1 on the life x, if y be the survivor, with return of nP the net annual premiums paid, if y die first. At the end of n years, when the next premium is just due, but unpaid:

$$\text{Reserve} = \frac{A\overline{_{x+n.y+n}}}{1 - (1 + n\text{P})\, A_{\overline{x+n}\ \overline{y+n}}^{\ \ 1}} - P\,(1 + a_{x+n.y+n}).$$

For other rare varieties, reference may be made to the work of Chisholm, who has tabulated D_{xy}, N_{xy}, M^1_{xy}, and R^1_{xy}, for every yearly difference of the Carlisle Table.

SHORT METHOD OF DETERMINING THE EQUIVALENT AMOUNT INSURED BY PAID-UP POLICY. — A remarkably simple formula was devised by Sprague, and extended by Macfadyen, showing at once the result of the double process of finding the reserve, and thence the equivalent amount insured by a paid-up policy. In the common formula of valuation, the term A^{m-n}_{x+n} is the single premium on $1 of paid-up insurance, page 266. Dividing the Reserve V_{x+n} or the whole equation by this term, will consequently give the equivalent sum insured, which is

$$1 - P_x \frac{1 + a^{m-n}_{x+n}}{A^{m-n}_{x+n}} = 1 - \frac{P_x}{P_{x+n}}.$$

By dividing the first numerator and denominator by the numerator, the denominator takes the well-known expression for P_{x+n}, given in the last fraction. Let s denote the amount insured by the first policy. Multiplying the above result for $1 by s, we have the equivalent Amount

$$\text{Insured by the Paid-up Policy} = s\left(1 - \frac{P_x}{P_{x+n}}\right).$$

Here P denotes the net premium, or the office premium when loaded with a uniform percentage.

Example 1.—A temporary insurance of $5000, for ten years, is effected at the age of 40. After four annual premiums have been paid, at the end of four years, the equivalent amount of paid-up policy for the remaining six years will be, from Table LIII,

$$s\left(1 - \frac{P_{40}}{P_{44}}\right) = s\left(1 - \frac{10.544}{12.599}\right) = 5000\,(1 - .83689) = \$815.55.$$

Example 2.—A person at the age of thirty-five years has an ordinary endowment insurance of $10,000 on his life, payable at the age sixty-five or at previous death. At the end of ten years, the sum insured by paid-up policy, equivalent to the ten annual premiums paid, will be, from Table LV,

$$s\left(1 - \frac{P_{35}}{P_{45}}\right) = 10,000\left(1 - \frac{24.724}{41.499}\right) = \$4042.28.$$

This sum is payable at "Death or 65," as under the original policy.

NON-FORFEITING PLAN.—In comparison with this correct result $4042.28, "the non-forfeiting plan," so called, would give a paid-up policy for ten-thirtieths or one-third of the original $10,000, which is only $3,333.33. This is in the ratio of the total number of premiums payable, to the number already paid. For shorter periods of insurance, not much exceeding ten years, the results of this empiric rule will approach nearer to accuracy. Further discussion of this subject may be found in the fifteenth and sixteenth volumes of the *Journal*, and an able article by Mr. McClintock in the seventeenth volume.

SURRENDER VALUE.—The Massachusetts non-forfeiture law provides that on lapsed policies, four-fifths of the net value at the time of lapsing, less the outstanding note, if any, shall be applied as a single premium of temporary insurance to continue the policy. And in case of death during such term of extension, the unpaid premiums may be deducted from the sum insured. We may observe that the premiums of term insurance in this collection, are given in Table LII; from which, corresponding results may be found by proportion.

In ordinary practice, a deduction is made from the Net Value to give the Surrender Value, depending on the health of the insured, on the cost of replacing the risk, or other circumstances. The office system of deductions generally refers to surrenders made, as they usually are, *at the end* of the policy year. Todd's Tables, Edinburgh, 1852, may illustrate this topic. If a surrender is made earlier in the year, as at the middle of it, a portion of the Premium last paid, will be returnable to the insured, for risk not incurred in the unexpired part of the year. For illustration, let the tabular net value during the second year, be separated into two parts thus described: (1) The

net value $17.64 at the end of the first year, increasing uniformly to $35.68 at the end of the second year, as noted at the beginning of this Section. (2) The net premium of $28 paid at the beginning of the second year, gradually decreases to 0 during the ensuing second year. The full reserve at any time in the second year, is made up of these two continuous parts, (1) and (2); and the office percentage is deducted by Todd from the former part only, while the latter or premium part is directly returnable. Thus at the middle of a policy year, half the net premium which was paid six months before, is subtracted from the present tabular reserve; then the office reduction is made for surrender value, to which the half premium is again restored.

ANNUAL VALUATION OF AN INSURANCE OFFICE. — The general plan is thus stated in De Morgan's *Essay on Probabilities*, page 275:—" The most simple theoretical way of conducting the process, is to ascertain the value of every policy; that is, to ascertain how much should be given to the holder of each policy to renounce his claim, the office also abandoning the future premiums. When this is done, it is obvious that the office is not solvent, unless the assets arising from the accumulation of former years be sufficient to pay the values of all the policies, and thus to buy them all up. Otherwise, calculate the present value of all premiums due to the office, and also the present value of all claims to which it is liable. To the former add the sum total of the assets of the office, and to the latter add the present value of a perpetuity equal to the expenses of management. Thus, let

$$P = \text{present value of all premiums.}$$
$$C = \text{present value of all claims.}$$
$$A = \text{total assets of the office.}$$
$$M = \text{present value of all expenses of management.}$$

If then P and A together exceed C and M together, the office is solvent. On each of these items a few remarks may be made.

(P.) All the parties who are of the same office age, may have their several policies considered as one collective policy, in respect of which the sum of the premiums is paid as one premium, and the sum of the possible claims is one claim. But as these premiums are payable at all periods of the year, they may be considered as, one with another, due at six months after the valuation, at which time the present office age of the parties may be considered to be their real age.

(C.) All bonuses which have actually been added to the policies must be included in the claims; and the value of each claim must be carefully found, with reference to the time after death at which it is paid.

(A.) The principal of the assets must be deduced entirely by means of the income it yields, and must be ascertained from the income by means of the rate of interest assumed.

(M.) Against the expenses of management may be set, as far as they go, the incidental profits, when they can be tolerably well ascertained."

DISTRIBUTION OF SURPLUS. — The methods employed in upwards of seventy British Life Offices, are very plainly exhibited by Hewat in the *Assurance Magazine*, Vol. XXII, page 286. It appears that nearly all the Companies allow the option of applying the dividend to reduce the current premium ; and in the general average, the " loading " on the premiums is practically refunded.

The Thirteenth Report, 1868, of the Insurance Commissioner of Massachusetts, contains a series of communications on the Contribution plan of dividends, originated

by Messrs Homans and Faekler in 1863. A single illustration and the formula below are recalled and revised from a former article in the *Insurance Times* (New York, 1868), Vol. I, page 545:

A party aged thirty-five years, takes out an ordinary life policy of $10,000, at an annual premium of $273 (Carlisle four per cent. net, with 35 per cent. loading). Required his annual dividends on the contribution plan, according as the Reserve is reckoned at three, four, five, or six per cent. interest, by the Carlisle Table; the Company receiving six per cent on investments, above expenses.

| RESERVE AT THREE PER CENT. | | | RESERVE AT FOUR PER CENT. | | |
END OF YEAR.	RESERVE V.	CONTRIBUTION DIVIDEND.	PREMIUM LESS DIVIDEND.	END OF YEAR.	RESERVE V.	CONTRIBUTION DIVIDEND.	PREMIUM LESS DIVIDEND.
1	$128.70	$63.25	$209.75	1	$108.50	$81.26	$191.74
2	259.90	67.19	205.81	2	230.00	83.69	189.31
3	393.20	71.19	201.81	3	334.60	85.78	187.22
4	539.10	76.56	196.44	4	451.20	88.11	184.89
5	663.80	79.30	190.70	5	567.40	90.44	182.56
10	1,322.60	99.07	173.93	10	1,136.06	101.89	117.19
20	3,100.50	152.40	120.60	20	2,782.10	134.73	138.27
30	4,898.00	207.83	65.17	30	4,538.40	169.86	103.14

| RESERVE AT FIVE PER CENT. | | | RESERVE AT SIX PER CENT. | | |
END OF YEAR.	RESERVE V.	CONTRIBUTION DIVIDEND	PREMIUM LESS DIVIDEND.	END OF YEAR.	RESERVE V.	CONTRIBUTION DIVIDEND.	PREMIUM LESS DIVIDEND.
1	$92.20	$96.16	$176.84	1	$79.20	$108.33	$164.67
2	188.60	97.12	175.88	2	161.10	108.33	164.67
3	285.90	98.12	174.88	3	245.80	108.33	164.67
4	386.90	99.11	173.89	4	333.60	108.33	164.67
5	486.90	100.11	172.88	5	420.80	108.33	164.67
10	977.90	105.02	167.98	10	843.60	108.33	164.67
20	2,498.90	120.23	152.77	20	2,246.60	108.33	164.67
30	4,205.90	137.30	136.70	30	3,898.90	108.33	164.67

In general terms, let x denote the age of entry. Let V denote the Reserve or net value on each $1 insured at the end of n policy years, when the next premium is just due but not paid. Also let V_1 denote the corresponding Reserve twelve months after, at the date of investigation. Let i denote the rate of interest assumed in computing the Reserve; and let i' be the rate of interest realized on the Office assets. And let $(P_x - e)$ denote the Office premium less its current expense, and p_x, the net premium. The following three-fold expression will then denote the *Contribution to Surplus*:

$$(V + p_x)(i' - i) + (P_x - e - p_x)(1 + i') + (q_{x+n} - q'_{x+n})(1 - V_1).$$

Here the first term makes restitution for the difference of interest $i' - i$ on the renewal value of the policy. The next term restores the loading on the premium, with a year's interest. And the last term corrects for the excess of the tabular rate of mortality q_{x+n} above the realized rate q'_{x+n}. In the preceding illustration, these two rates of mortality were assumed to be equal. The original formula differs from the one above by the subtraction of a zero equation, so that the numeric results will be precisely the same.

SECTION VIII.

Life Annuities. Survivorship and Reversionary Annuities. Successive Lives.

In the received system of life annuities, the annual payment is made at the end of each year during the life of the annuitant, with no allowance for the proportional part of the year of death. In the case of a survivorship annuity on the life x to commence on the death of y, the first yearly payment is made at the end of the year, in which y dies, and the last payment at the end of the last year before x dies. But special formulas have been investigated, which give the price or present value of an annuity payable half-yearly or quarterly, etc., and with a proportional part to the day of death.

LIFE ANNUITY. To recapitulate from Sections III and V, the Present Value of an annuity of \$1 payable at the end of each year during life, is

$$a_x = \frac{N_{x+1}}{D_x}. \quad \text{On two Joint Lives, } a_{xy} = \frac{N_{x+1.y+1}}{D_{xy}}.$$

When payable at the beginning of each year, the Present Value is

$$1 + a_x = \frac{N_x}{D_x} = \frac{D_x + N_{x+1}}{D_x}. \qquad 1 + a_{xy} = \frac{N_{xy}}{D_{xy}}.$$

TEMPORARY ANNUITY. The Present Value of an annuity of \$1 for n years, on a life aged x, is

$$a_x^n = \frac{N_{x+1} - N_{x+n+1}}{D_x} = a_x - {}^n a_x. \qquad 1 + a_x^{n-1} = \frac{N_x - N_{x+n}}{D_x}.$$

Here and in such connections, n denotes the term of years, and is not used as an Algebraic exponent. On Two Joint Lives aged x and y, the Present Value for n years, is

$$a_{xy}^n = \frac{N_{x+1.y+1} - N_{x+n+1.y+n+1}}{D_{xy}}. \qquad 1 + a_{xy}^{n-1} = \frac{N_{xy} - N_{x+n.y+n}}{D_{xy}}.$$

DEFERRED ANNUITY. The Present Value of a life annuity of \$1, deferred for n years, the first payment being due at the age $x + n + 1$, is

$$^n a_x = \frac{N_{x+n+1}}{D_x} = \frac{D_{x+n}}{D_x} \cdot a_{x+n}.$$

$$^n a_{xy} = \frac{N_{x+n+1.y+n+1}}{D_{xy}} = \frac{D_{x+n.y+n}}{D_{xy}} \cdot a_{x+n.y+n}.$$

The divisor to give the annual premium for n payments, will be $1 + a_x^{n-1}$. And for a change to the beginning of the year, or first payment of annuity at the age $x + n$:

$$\text{Present Value} = \frac{N_{x+n}}{D_x}.$$

$$\text{On Joint Lives, Present Value} = \frac{N_{x+n.y+n}}{D_{xy}}.$$

DEFERRED TEMPORARY ANNUITY. The Present Value of a temporary annuity of $1, to be entered upon at the expiration of t years, and then to continue n years, if the annuitant now aged x shall so long live, is

$$\frac{D_{x+t} \cdot a_{x+t} - D_{x+t+n} \cdot a_{x+t+n}}{D_x} = \frac{N_{x+t+1} - N_{x+t+n+1}}{D_x}.$$

INCREASING OR DECREASING ANNUITY. The Present Value of an annuity on the life x, for the whole term of life, commencing at a and *increasing* b annually, is readily proved by summations founded on the previous formula, to be

$$\text{Single Premium} = \frac{a N_{x+1} + b S_{x+2}}{D_x}.$$

And for a similar life annuity *decreasing* b annually, we have

$$\text{Single Premium} = \frac{a N_{x+1} - b S_{x+2}}{D_x}.$$

The Present Value of a temporary annuity on the life x for n years, commencing at a and *increasing* b each year, is

$$\frac{a \cdot (N_{x+1} - N_{x+n+1}) + b (S_{x+2} - S_{x+n+2} - n \cdot N_{x+n+1})}{D_x}.$$

When the similar annuity *decreases* b annually, simply reversing the sign of b in the last formula, will give the present value. But in this case b must not exceed $\frac{a}{n-1}$, that the annuity may not finally become negative.

For the Present Value of an annuity of $1, increasing annually by $1 for n years, and then continuing constant at n through life, we have

$$\text{Single Premium} = \frac{S_{x+1} - S_{x+n+1}}{D_x}.$$

The Present Value of an *Annuity certain* for n years, commencing at a and *increasing* b each year, was not given in Part I. But by taking the derivative D of the last equation on page 59, with respect to v, we find the required value of this increasing annuity:

$$(a-b)\, V + bv\, DV = \left(a + nb + \frac{b}{i}\right) \cdot \frac{1 - v^n}{i} - \frac{nb}{i}.$$

The value of the similar annuity *decreasing* b each year, is found by reversing the sign of b.

VALUATION OF ANNUITY POLICIES. The Present Value of Single and Joint Life Annuities at entry, being a_x, a_{xy}, etc., the Reserve after n years will evidently be a_{x+n}, $a_{x+n.y+n}$, etc. In like manner, the Present Value of a Survivorship Annuity of $1 on the life of x after the death of y, being $a_x - a_{xy}$, the Reserve n years after entry, will be $a_{x+n} - a_{x+n.y+n}$.

But if the Survivorship Annuity of $1 on the life of x after the death of y, is conditioned with the return of the single premium, without interest, should x die before y, this premium and the Reserve n years after entry, are proved to be

$$\text{Single Premium} = \frac{a_x - a_{xy}}{1 - A_{\overline{xy}}^{\frac{1}{}}};$$

$$\text{Reserve} = a_{x+n} - a_{x+n.y+n} + \frac{a_x - a_{xy}}{1 - A_{\overline{xy}}^{\frac{1}{}}} \cdot A_{\overline{x+n.y+n}}^{\frac{1}{}}.$$

When the simple Survivorship Annuity of \$1 on the life of x after the death of y, is paid for by an annual premium during joint life, this Premium and the Reserve n years after entry, will be

$$\text{Annual Premium} = \frac{a_x - a_{xy}}{1 + a_{xy}};$$

$$\text{Reserve} = a_{x+n} - a_{x+n.y+n} - \frac{a_x - a_{xy}}{1 + a_{xy}} \cdot (1 + a_{x+n.y+n}).$$

The premium for one year only, to secure a Survivorship Annuity in case y dies in the first year, is $(1 - p_y) a_x$, or $q_y a_x$. At some ages, this rate is more, and at other ages less than the average premium during the joint lives. In the latter case, the Company would not be fully recompensed in the first years, unless the policy were continued to maturity. The present divisor to give the annual premium is $1 + a_{xy}$; if this were changed to $1 + a_{xy}^9$, the ten payment premium so found, would generally prove sufficient in the first years; and so of various other scales of premium.

Under an arrangement of the Survivorship Annuity, such that the first yearly payment is made just one year after the death of y, or more generally m times a year thereafter, and a proportional part is to be paid up to the date of x's death, Mr. Woolhouse finds the Present Value

$$= \left(1 - \frac{\delta}{2m}\right)\left(a_x - a_{xy} + \frac{\mu_y}{12}\right) + \frac{\delta}{12m^2} \cdot A_{\overline{xy}}^{\frac{1}{}}.$$

This is the formula given in the *Journal*, Vol. XV, page 113. Mr. Sprague had previously determined the following approximate values, according as the annuity is payable

Yearly,	Half-Yearly,	Quarterly.
$(a_x - a_{xy})\sqrt{v}$,	$(a_x - a_{xy}) \cdot \dfrac{1 + \sqrt{v}}{2}$,	$(a_x - a_{xy}) \cdot \dfrac{i}{(1+i)^{\frac{1}{4}} - 1}$.

NOTE.—It will sometimes be required that the *common life annuity* be extended to *one more payment*, at the end of the year of death. The present value of such payment being the single premium A_x on \$1 insured, the present value of the extended annuity will be $a_x + A_x$.

In case the annuity is to be extended *proportionally to the day of death*, the present value becomes $a_x + \frac{1}{2}A_x$; since death will occur, on the average, at the middle of the last year. This is the method of Francis Baily. A slight further correction is given by the formula on page 242.

ANNUITY ON THE SURVIVOR OR LAST OF ANY NUMBER OF LIVES. Let us take first the case of two lives, of the present ages x and y. Then $p_{x,n} = l_{x+n} \div l_x$ and $p_{y,n} = l_{y+n} \div l_y$ will denote their probabilities of living to the end of any future year denoted as the nth. By Sect. I, Principles 3, 4, the product $(1 - p_{x,n})(1 - p_{y,n})$ will express the probability that both will be deceased; consequently,

$$1 - (1 - p_{x,n})(1 - p_{y,n}) = p_{x,n} + p_{y,n} - p_{x,n} p_{y,n},$$

expresses the probability that both will *not* be extinct, or that one at least will be living to receive the nth annual payment. Therefore multiplying each term by v^n, and

taking the sum of the products for $n = 1, 2, 3, \ldots$, we find the required value on the longest of two lives to be the sum of the two single annuities, minus the joint annuity ; or,

$$a_{\overline{xy}} = a_x + a_y - a_{xy}.$$

The same mode of solution, illustrated by the theory of the higher equations of Algebra, gives the value of an annuity *on the longest* of three lives, *denoted by a line over the suffixes:*

$$a_{\overline{xyz}} = a_x + a_y + a_z - (a_{xy} + a_{xz} + a_{yz}) + a_{xyz}.$$

And generally, the value of an annuity on the longest of any number of lives, is equal to the sum of the annuities on the single lives, *minus* the sum of annuities on the joint lives combined by twos, *plus* the sum of annuities on the joint lives combined by threes, and so on ; the odd orders being positive, and the even negative.

Possibly this species of annuity might be resolved into binomial or single life factors, like the elementary probabilities above, aided by assumed constants. In another expression, if C_m^n denote the sum of joint life annuities on m lives combined n in a set, then evidently, extending to n such terms,

$$a_{\overline{xyz\ldots}} = C_m^1 - C_m^2 + C_m^3 - C_m^4 + \ldots.$$

VALUE OF AN ANNUITY ON THE LAST n SURVIVORS OF m LIVES.

For an annuity to commence immediately *and terminate* with *the last death but one, of m lives*, the present value is demonstrated by Milne, Vol. I, pages 45, 126, to be

$$C_m^2 - 2 . C_m^3 + 3 . C_m^4 - 4 . C_m^5 + \ldots.$$

Thus the present value of an annuity to end with the last death but one of two lives, is a_{xy} ; and similarly of three lives, x, y, z, the present value is

$$a_{xy} + a_{xz} + a_{yz} - 2a_{xyz}.$$

In every case, the algebraic sum of the coefficients of a is **1,** to indicate one annuity in present possession.

And generally, to commence immediately and terminate with the last death but $n-1$ of m given lives, the present value of the annuity is the series of $m - n + 1$ terms of C,

$$C_m^n - n . C_m^{n+1} + n . \frac{n+1}{2} . C_m^{n+2} - n . \frac{n+1}{2} . \frac{n+2}{3} . C_m^{n+3} + \ldots$$

This general formula is proved by Milne, pages 42, 126, by multiplying out the probabilities of five lives, and applying the rules of combination. By introducing an auxiliary t, we obtain the following *shorter demonstration :*

Let p_x, p_y, $\ldots$, denote the tabular probabilities that the m lives x, y, z, $\ldots$, will survive h years. And let the continued product of the m probabilities of decease $(1 - p_x) (1 - p_y) (1 - p_z) \ldots$ be temporarily denoted by P. The required probability that "n or more" out of m lives will survive h years, will be the sum of elementary products of the form

$$\Sigma n \text{ factors} \times (m - n) \text{ factors} = \Sigma p_x p_y \ldots (1 - p_z)(1 - p_v) \ldots = P\Sigma \frac{p_x}{1 - p_x} . \frac{p_y}{1 - p_y} \ldots$$
$$+ \Sigma (n+1) \text{ factors} \times (m - n - 1) \text{ factors} = \quad \text{etc.,}$$
$$+ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

The right-hand expressions after P represent the combinations of the fractions taken n in a set, $n+1$ in a set, and so on to m in a set. By comparison with the Algebraic theory of the roots of the higher equations, these combinations will be the coefficients of t^n, t^{n+1}, ... t^m in the development of

$$P\left(1+\frac{tp_x}{1-p_x}\right)\left(1+\frac{tp_y}{1-p_y}\right)\dots = [1+(t-1)\,p_x]\,[1+(t-1)\,p_y]\dots$$

$$= \dots + (t-1)^n\,C^{(n)} + (t-1)^{n+1}\,C^{(n+1)} + (t-1)^{n+2}.\,C^{(n+2)} + \dots + (t-1)^m.\,C^{(m)}.$$

Here $C^{(n)}$ denotes the sum of the combinations of the m factors p_x, p_y, ..., taken n in a set; etc., etc. Developing and omitting all powers of t lower than the nth; then making $t=1$, as above indicated, we find the precise result sought, here denoted by P':

$$P' = C^{(n)} - nC^{(n+1)} + \frac{n\,(n+1)}{1\cdot2}\,C^{(n+2)} - \frac{n\,(n+1)\,(n+2)}{1\cdot2\cdot3}\,C^{(n+3)} + \dots$$

Lastly multiplying by v^h, and taking the sum for $h=1, 2, 3, \dots$, we change from probabilities $C^{(n)}$ to annuities C_m^n, and the formula on the preceding page, from Milne, is verified. The symbolic form is evidently $C_m^n\,(1+C)^{-n}$, developed as far as C^m.

REVERSIONARY ANNUITIES.

General Problem.—To determine the present value of an annuity dependent upon the joint existence of the last n survivors out of m lives x, y, z, ..., after the failure of the joint existence of the last n' survivors out of m' other lives x', y', z', ... (Milne, p. 130).

The leading principle of solution is very simple. As just described, let P' denote the probability that n or more of the m lives will survive h years. And let P'' denote the like probability that n' or more of the m' lives will survive h years; then $1-P''$ is the opposite probability, that they will fail. The joint probability is therefore $P'\,(1-P'')$. Multiplying this by v^h, and taking the sum for all values of h, we have the required value of the annuity in terms of single and joint annuities. Also the required annuity and its components may all be temporary or all be deferred for equal periods.

Example 1.—Required the value of an annuity on the life of x to commence after the death of y.

$$\text{Single Premium} = a_x - a_{xy}. \qquad \text{Annual Premium} = \frac{a_x - a_{xy}}{1 + a_{xy}}.$$

By aid of the above type $P'\,(1-P'')$, this solution and more complex ones yet to follow, are easily written by inspection. To verify the present result, cancel the annuity on x, during the joint lives. This latter method in De Morgan's Essay on Probabilities, is termed " the balancing of annuities."

For future reference, let another form also be given, which is easily proved by substituting for N below, the equivalent series of D and canceling:

$$a_x - a_{xy} = \frac{d_y D_x a_x + d_{y+1} D_{x+1} a_{x+1} + d_{y+2} D_{x+2} a_{x+2} + \dots}{l_y D_x}.$$

$$a_x - a_{xy} = \frac{(l_y - l_{y+1})\,N_{x+1} + (l_{y+1} - l_{y+2})\,N_{x+2} + \dots}{l_y D_x}.$$

2. Annuity on the life of x to commence after the first death of y or z; the present value or

$$\text{Single Premium} = a_x - a_{xyz}; \qquad \text{Annual Premium} = \frac{a_x - a_{xyz}}{1 + a_{xyz}}.$$

Or $\qquad a_x - a_{xyz} = \dfrac{(l_y\, l_z - l_{y+1}\, l_{z+1})\, N_{x+1} + (l_{y+1}\, l_{z+1} - l_{y+2}\, l_{z+2})\, N_{x+2} + \cdots\cdots}{l_y\, l_z\, D_x}$

3. Annuity on the joint lives x, y, to commence after the death of z:

$$\text{Single Premium} = a_{xy} - a_{xyz}; \qquad \text{Annual Premium} = \frac{a_{xy} - a_{xyz}}{1 + a_{xyz}}.$$

4. Annuity on the life of x after the death of both y and z:

$$\text{Single Premium} \ = a_x - a_{xy} - a_{xz} + a_{xyz}.$$

$$\text{Annual Premium} = \frac{a_x - a_{xy} - a_{xz} + a_{xyz}}{1 + a_{xy} + a_{xz} - a_{xyz}}.$$

5. Annuity on the survivor of x and y after the death of z:

$$\text{Single Premium} \ = a_x + a_y - a_{xy} - a_{xz} - a_{yz} + a_{xyz}.$$

$$\text{Annual Premium} = \frac{a_x + a_y - a_{xy} - a_{xz} - a_{yz} + a_{xyz}}{1 + a_{xz} + a_{yz} - a_{xyz}}.$$

VERIFICATION OF FORMULAS.—In their present state, the algebraic sum of the coefficients of a in the single premium is zero, indicating no immediate possession of the annuity. And the only change from the present state must occur by the first death of either x, y, or z; by making this supposition in the last five cases, and noting the results, the solutions given above are again verified. The same methods can be further applied to the solutions following.

6. Annuity on the life of the survivor of x and y, that is on either one, after the death of the other. Give an annuity to both, to be restored as long as both are alive:

$$\text{Single Premium} = a_x + a_y - 2a_{xy}, \qquad \text{Annual Premium} = \frac{a_x + a_y - 2a_{xy}}{1 + a_{xy}}.$$

7. Annuity to commence with the first death of x, y, or z, and to end with the joint life of the other two, that is with the second death: Grant each pair a joint life annuity to be restored as long as all three are alive:

$$\text{Single Premium} \ = a_{xy} + a_{xz} + a_{yz} - 3a_{xyz},$$

$$\text{Annual Premium} = \frac{a_{xy} + a_{xz} + a_{yz} - 3a_{xyz}}{1 + a_{xyz}}.$$

PARTITION OF ANNUITIES.

8. An annuity on the last survivor of two lives x, y, is to be equally divided between them during joint life, and afterwards to go to the survivor. The present value of

$$x\text{'s interest} = a_x - \tfrac{1}{2}a_{xy}, \qquad y\text{'s interest} = a_y - \tfrac{1}{2}a_{xy}.$$

Their sum evidently makes up the whole value of the annuity.

9. An annuity for the longest life is to be divided at each payment equally between the survivors of three lives, x, y, z:

$$\text{Value of } x\text{'s share} = a_x - \tfrac{1}{2}(a_{xy} + a_{xz}) + \tfrac{1}{3}a_{xyz}.$$

Here x may denote either one of the three lives. And generally for equal division of such annuity between the survivors of m lives successively, if [ ] denote that we exclude from C_m^n as before defined, every combination into which x does not enter·

$$x\text{'s share} = a_x - \tfrac{1}{2}[C_m^2] + \tfrac{1}{3}[C_m^3] - \tfrac{1}{4}[C_m^4] + \ldots \pm \frac{1}{n}[C_m^n].$$

10. Two lives x, y, possess an annuity on the survivor of them. If either dies before a third person z, the remaining annuity is to be equally divided between z and the survivor during their joint lives. Required the value of z's interest·

$$z\text{'s interest} = \tfrac{1}{2}a_{xz} + \tfrac{1}{2}a_{yz} - a_{xyz}. \quad \text{(Milne, p. 139.)}$$

11. An annuity on the last two survivors of three lives x, y, z, is to be divided equally among them while all are living; and after the decease of any one of them is to be divided equally between the two survivors during the remainder of their joint lives. The value of

$$x\text{'s interest} = \tfrac{1}{2}a_{xy} + \tfrac{1}{2}a_{xz} - \tfrac{2}{3}a_{xyz}. \quad \text{(Milne, p. 140.)}$$

12. An annuity, after the decease of x, is to be divided equally between y and z during their joint lives; and is then continued to the last survivor for his life. (Milne, p. 141.)

$$y\text{'s interest} = a_y - a_{xy} - \tfrac{1}{2}a_{yz} + \tfrac{1}{2}a_{xyz}.$$

13. An annuity on the last survivor of x, y, z, is to be divided equally between x and y during their joint existence. After the decease of either of them, it is to be divided equally between z if then living, and the survivor during their joint existence. And when there is but one survivor left he shall receive the whole of the remaining annuity. (Milne, p. 142.)

$$x\text{'s interest} = a_x - \tfrac{1}{2}a_{xy} - \tfrac{1}{2}a_{xz} + \tfrac{1}{2}a_{xyz}.$$

CONDITIONAL PERIODS.

14. To find the value of an annuity payable during the joint lives of x, y, and also during t years after the death of y, provided x shall so long live.

During the first t years, whether y be dead or living, x will be entitled to the temporary life annuity,

$$\frac{N_{x+1} - N_{x+t+1}}{D_x} = a_x - \frac{D_{x+t}}{D_x} \cdot a_{x+t}.$$

After this, or at the end of any given year denoted by $t+n$, the annual payment will depend on the combined chance that x is living, and that y was alive t years previous. This expectation, on both multiplying and dividing by l_{x+t}, also summing with respect to n, to the end of the life table, gives

$$\Sigma v^{t+n} \cdot \frac{l_{x+t+n}}{l_x} \cdot \frac{l_{y+n}}{l_y} = \Sigma v^t \cdot \frac{l_{x+t}}{l_x} \times v^n \cdot \frac{l_{x+t+n} l_{y+n}}{l_{x+t} l_y} = \frac{D_{x+t}}{D_x} \cdot a_{x+t.y} \, .$$

Adding this to the former result, we have the total value,

$$a_x - \frac{D_{x+t}}{D_x} \left(a_{x+t} - a_{x+t.y} \right).$$

15. An annuity certain for the term of 15 years is to be enjoyed by P and his heirs, during the joint existence of two lives x, y. If that joint existence fail before the expiration of 8 years, the annuity is to go to Q and his heirs for the remainder of the term of 15 years. To find the present value of P's interest, and that of Q.

The value of P's interest for the first 8 years is evidently the temporary annuity on the joint lives x, y; for the next 7 years, P's interest is the deferred annuity certain for 7 years multiplied by the chance that x and y will both live through the first period of 8 years to secure it. That is,

$$\text{P's interest} = a_{xy} - \frac{D_{x+8.y+8}}{D_x} \left(a_{x+8.y+8} - \frac{1-v^7}{i} \right).$$

The value of Q's interest will be obtained by subtracting P's interest from the value of the entire annuity $\dfrac{1-v^{15}}{i}$.

16. A reversionary annuity to commence on the death of x and continue for the remainder of the life of y, is also made payable for t years, whether y is alive or dead:

$$y\text{'s interest} = A_x \cdot \frac{1-v^t}{i} + \frac{D_{y+t}}{D_y} \left(a_{y+t} - a_{x.y+t} \right).$$

17. To find the single and annual premiums for an annuity to commence at the death of y, and continue payable during the remainder of x's life, but to be payable only if y dies within t years.

In this problem, which is quoted from the *Journal*, Vol. 9, page 302, the single premium will be

$$a_x - a_{xy} - \frac{l_{y+t} D_{x+t}}{l_y D_x} \left(a_{x+t} - a_{x+t.y+t} \right).$$

And the divisor to give the annual premium, payable through t years, if the joint life so long continues, will be $1 + a_{xy}^{t-1}$. We may observe that the single premium is evidently the first t terms of the series before stated on page 279.

18. Problem.—To determine the present value of an annuity on the life of x, to commence with the failure of the joint existence of y and z provided it be z who dies first.

In case the ages of y and z are equal, the probability that z will die first of the two is $\frac{1}{2}$. Therefore $\frac{1}{2}$ the result of the preceding Problem 2, on p. 280, gives the value:

$$\text{Annuity on } x = \tfrac{1}{2} \left(a_x - a_{xyy} \right).$$

Secondly, if the ages of y and z are unequal, in case x is the oldest life, and approximately in other cases, the chance that z will die first of the two is usually taken as $\frac{1}{2}$ in practice. So that $\frac{1}{2}$ of the result of Problem 4 gives the value of the annuity on x, *after* the death of y. Problem 3 gives the value *until* the death of y; and the sum of the two will express the total value:

$$\text{Annuity on } x = \tfrac{1}{2}\left(a_x + a_{xy} - a_{xz} - a_{xyz}\right);$$

$$\text{Annuity on } x = \Sigma\, \frac{l_{z+n-1} - l_{z+n}}{l_z} \cdot \frac{l_{y+n-1} + l_{y+n}}{2 l_y} \cdot \frac{N_{x+n}}{D_x}; \qquad n = 1, 2, 3, \ldots;$$

$$\text{That is, Annuity on } x = \Sigma\, \frac{d_{z+n-1} \cdot l_{y+n-\frac{1}{2}} \cdot N_{x+n}}{l_z l_y D_x}.$$

Another solution of this Problem will be given in the next Section. For other combinations of Survivorship, reference may be made to the works of Morgan, Bailey, Milne, Sang, Farr; and to the admirable papers of Makeham in the *Journal*, Vols. 9, 10, 12.

ON SUCCESSIVE LIVES.

Problem 1.—To determine the present value of a deferred income of $1 *per annum* to continue forever, the first payment to commence at the end of the death year of x.

The principal $\frac{1}{i}$ when multiplied by the rate i gives the interest $1 in each year perpetually. Withdrawing from this principal, the annuity of $1 during the life of x, we have the required result:

$$\text{Present Value} = \frac{1}{i} - a_x = \left(1 + \frac{1}{i}\right)A_x.$$

Here the last member is found by merely substituting for a its equal, from the common formula

$$A_x = 1 - (1 - v)(1 + a_x) = \frac{1 - i a_x}{1 + i}.$$

Problem 2.—"An annuity is to be enjoyed during the existence of a life aged x, and at the end of the year of his decease, a successor aged y is to be nominated, who is to enjoy the annuity during his life. Required the present value of the annuity on the second life y."

In the system of compound interest, if v'' is the factor to discount a sum from the end, to its present value at the beginning of the third year, v' the factor to discount through the second year, and v the factor to discount through the first year; the factor to discount through three years is proved to be the product $vv'v''$. So, the single premium A is evidently the factor to discount the insurance of $1, from the end, to its present value at the beginning of the whole term of insurance; and $AA'A''$ would represent the factor to discount through three successive periods of life. In the Problem above, the value of $1 annuity during the life y, with first payment on the day of nomination, $1 + a_y$. The factor to discount this sum from the future date of nomination, to the present time, being A_x, we have the Present Value of the Annuity

During the second life $= A_x (1 + a_y) = A_x \left(1 + \dfrac{1}{i}\right)(1 - Ay)$.

During the two successive lives $= a_x + A_x (1 + ay)$.

For a_y, we have above substituted its equal, as in Problem 1. If $x, 1, 2, \ldots n-1$, n designate the successive lives in order, the present value of \$1 annuity to continue during the nth successive life-time beginning with an immediate payment, will be

$$A_x A_1 A_2 \ldots A_{n-1} (1 + a_n); \qquad \text{or} \qquad \left(1 + \frac{1}{i}\right) A_x (1 - A_n) A_1 A_2 \ldots A_{n-1}.$$

PROBLEM 3.—Required the total present value of \$1 *per annum* during n successive lives, the first payment to commence at the end of the death year of the present life x.

The result sought will be found by making $n = 1, 2, 3, \ldots n$, in the last expression, and taking the sum of all the terms. Thus, omitting the common factor $\left(1 + \dfrac{1}{i}\right) A_x$, and making $n = 1, 2, 3, \ldots n$, the first result is $1 - A_1$; the second is $A_1 - A_1 A_2$; the third is $A_1 A_2 - A_1 A_2 A_3$, etc. From these, we see that all the terms will cancel each other, except the first and the last. Hence on restoring the omitted factor,

$$\text{Present Value} = \left(1 + \frac{1}{i}\right) A_x (1 - A_1 A_2 A_3 \ldots A_n).$$

When n is very great or infinite, the right-hand product vanishes, since each A is less than unity, leaving a result which is independent of the future ages to be nominated:

$$\text{Present Value} = \left(1 + \frac{1}{i}\right) A_x.$$

When the successive lives, after the life x, are all to be of the *same age y* at nomination, the formula for the value of the nth successive life, given at the end of Problem 2, becomes

$$A_x (1 + a_y) A_y^{n-1}.$$

In like manner, the formula of Problem 3, for the sum of n lives, will be

$$\left(1 + \frac{1}{i}\right) A_x (1 - A_y^n).$$

PROBLEM 4.—"Instead of an annuity, a fine of \$1 is to be paid at the end of the year in which each life in possession fails, being the time when the next succeeding life is nominated. Required the present value of each fine.

By Problem 2, when $n = 1$, Value of the first fine $= A_x$,

$\qquad\qquad n = 2, \qquad$ "   "   second fine $= A_x A_1$,

$\qquad\qquad n = 3, \qquad$ "   "   third fine $= A_x A_1 A_2$.

$\qquad\qquad n = 4, \qquad$ "   "   fourth fine $= A_x A_1 A_2 A_3$, etc.

The sum of the terms written, will evidently be the present value of the first four fines. Each term is readily derived from that which precedes, to any extent.

The present value of the first n fines, if the lives are all *of the same age* at nomination, will be the sum of n terms above, as a geometrical series, of which the ratio is A_y; and the sum is

$$\frac{A_x\,(1-A_y^n)}{1-A_y}; \text{ or if } n \text{ be infinite, the sum is } \frac{A_x}{1-A_y}.$$

By subtracting the former expression from the latter, we obtain the present value of all the fines after the nth, that is, of the $(n+1)$th and following fines to perpetuity:

$$\frac{A_x\,A_y^n}{1-A_y}.$$

The preceding summary is based chiefly on two original papers by Mr. Peter Gray in the *Assurance Magazine*, Vol. 2. In Vol. 21, a memoir and Table for the Enfranchisement of Copyholds, is given by Edward Smyth. Further problems relating to English church livings and copyholds are resolved in De Morgan's Essay on Probabilities, pages 228–236.

SECTION IX.

Derivative Formulas.   The Continuous Method.

Besides the regular Commutation Formulas, several principles of mathematical analysis have conducted to other formulas, which occasionally offer new advantages. Especially the common method of Algebraic elimination has been the guide to valuable improvements. For example, writing x and then $x+1$ in the formula for the expectation of life, we obtained two equations, from which the series common to both was easily eliminated, leaving the simple equation between e_x and e_{x+1} shown on page 243. By the same general method, and in other ways, the following *Formulas of Annual Derivation* have been obtained:

For the Expectation of Life,	$e_x - \tfrac{1}{2} = p_x\,(e_{x+1} + \tfrac{1}{2}).$
Annuity on a Single Life,	$a_x = vp_x\,(1 + a_{x+1}).$
Annuity on Two Joint Lives,	$a_{xy} = vp_x\,p_y\,(1 + a_{x+1.y+1}).$
Annuity on Three Joint Lives,	$a_{xyz} = vp_x\,p_y\,p_z\,(1 + a_{x+1.y+1.z+1}).$
Temporary Annuity,	$a_x^n = vp_x\,(1 + a_{x+1}^{n-1}).$
Temporary Annuity on Joint Lives,	$a_{xy}^n = vp_x\,p_y\,(1 + a_{x+1.y+1}^{n-1}).$
Insurance by Single Premium for Life,	$A_x = vp_x\left\{\dfrac{1}{p_x} - 1 + A_{x+1}\right\}.$
By Single Premium for Term,	$A_x^n = vp_x\left\{\dfrac{1}{p_x} - 1 + A_{x+1}^{n-1}\right\}.$

By Single Premium on Joint Lives, $\qquad A_{xy} = vp_x p_y \left(\dfrac{1}{p_x p_y} - 1 + A_{x+1.y+1} \right).$

Single Premium of Survivorship Insurance of \$1 to be paid at the end of the year in which x dies, provided y be the survivor,

$$A_{\overline{x.y}}^{\,1} = vp_x p_y \left\{ \frac{1}{2}\left(\frac{1}{p_x} - 1 \right)\left(\frac{1}{p_y} + 1 \right) + A_{\overline{x+1.y+1}}^{\,1} \right\}.$$

The values of λp_x and $\lambda\,(vp_x)$ are already given in Tables XXVI and XLIII. And at the oldest age of the life table, where these computations usually commence, p_{99} is 0; consequently $e_{99} = \frac{1}{2}$; the annuity $a_{99} = 0$; the single premium $A_{99} = v$; and $A_{\overline{99y}}^{\,1} = \frac{1}{2}v\,(1+p_y)$. From this limit, we can determine the other values in a connected series, by making $x = 98,\ 97,\ 96,\ 95,\ \ldots,$ in successive formulas. The operations will be greatly aided by the Addition and Subtraction Logarithms given in the *Tables and Formulæ* of Peter Gray, whose able researches first directed general attention to this method.

For practical illustration, Tables XLIV–XLVII in the present series, were computed by the formula of Temporary Annuities, $a_x^n = vp_x\,(1+a_{x+1}^{n-1})$. First the ages 99, 98, 97, 96, $\ldots,$ were written at the head of so many columns; under these, the values of $\lambda\,(vp)$ from Table XLIII for the ages one year younger, were copied, once for all, to be repeatedly added each in the same column.

TEMPORARY ANNUITIES. COMPUTATION OF $\lambda\,(1+a_x^{n-1})$.

PAYMENTS n	$\cdots\cdots$	96	97	98	99	AGE x.
	$\cdots\cdots$	$\overline{1}.681936$	$\overline{1}.627579$	$\overline{1}.585026$	$\overline{1}.505846$	$\lambda(vp_{x-1}) = \lambda a.$
2	$\cdots\cdots$	0.153574	0.141329	0.120743	$\cdots\cdots$	$\lambda(1+a^1).$
	$\cdots\cdots$	$\overline{1}.835510$	$\overline{1}.768908$	$\overline{1}.705769$	$\cdots\cdots$	Sum $= \lambda a.$
3	$\cdots\cdots$	0.200677	0.178369			$\lambda(1+a^2).$
	$\cdots\cdots$	$\overline{1}.882613$	$\overline{1}.805948$			Sum $= \lambda a.$
4	$\cdots\cdots$	0.214754				$\lambda(1+a^3).$

Here at 4 per cent. interest, $\lambda\,(vp_{98}) = \overline{1}.505846,\ \lambda\,(vp_{97}) = \overline{1}.585026,\ \ldots,$ $\lambda\,(1+a_{98}^1) = 0.120743,\ \lambda\,(1+a_{97}^1) = 0.141329,\ \ldots.$ At the first, regarding $\lambda\,(vp)$ as λa, we look out $\lambda\,(1+a)$ in Gray's Table and copy it below, one column to the left. Every logarithm $\lambda\,(1+a)$ so found is next added to $\lambda\,(vp)$ at the head of the column, and the sum written underneath. Again regarding each sum as λa, the corresponding $\lambda\,(1+a)$ is then found by Gray's Table, and copied as before, on the next lower line, one column to the left; and so on. The alternate lines present a complete Table of $\lambda\,(1+a_x^{n-1})$ for Temporary Annuities. When n is 1, the tabular result is uniformly 0; and at the foot of the columns, the last $\lambda\,(1+a)$ must coincide with the result of common life annuities. To prove the correctness of the work, while in progress, every tenth or fifteenth column can be computed by the independent Commutation formula or otherwise, for comparison and correction.

It appears scarcely necessary to observe in the use of Gray's Tables, when the negative index of the argument is $\overline{4},\ \overline{5},\ \overline{6},$ etc., we find Log $(1+x)$ as if the index

were 3, and prefix to the result of Table I, as many decimal cyphers; or in the use of Table II, as many extra decimal 9's, as the excess of the given index above $\bar{3}$, denotes. Thus when $\text{Log } x$ is 5.500, $\text{Log } (1+x)$ is 0.0000137, and $\text{Log } (1-x)$ is $\bar{1}$.9999862. There are Tables to seven places by the German author Zech, and by Wittstein; Gray's to six places are more conveniently arranged for practical use.

FORMULA OF VALUATION.—Three different forms have been published, the first by Hon. Elizur Wright, under the name of "the accumulation formula," a second by Mr. D. P. Fackler, and a third by Mr. Emory McClintock. To demonstrate the last, let i denote the rate of interest; and v the ratio $1 \div (1+i)$. Let V_{x+n} denote the Reserve at the end of n years on each \$1 insured at the age of entry x, with the net annual Premium P_x; so that $V_{x+n} + P_x$ will be the Reserve just after the Premium is paid. Assuming l_{x+n} persons to be thus insured for \$1 each, the death losses in the ensuing twelve months, according to the life table, will be $l_{x+n} - l_{x+n+1}$. Hence the Reserve with a year's interest, after payment of the \$1 death losses, evidently gives

$$l_{x+n} \left(V_{x+n} + P_x \right) (1+i) - (l_{x+n} - l_{x+n+1}) = l_{x+n+1} V_{x+n+1}.$$

Dividing by l_{x+n+1} and reducing, we have the required formula:

$$V_{x+n+1} = 1 - \frac{1}{v p_{x+n}} \left[(v - P_x) - V_{x+n} \right].$$

At the age x, just before the first premium is paid, the Reserve V is evidently 0, which is the initial value on the right of the last formula, when n is 0. Also at the end of the last year, V on the left becomes 0 when a temporary insurance expires, or 1 when an endowment matures, or 1 when a common life policy attains the oldest age of the life table. Thus the computation of the formula may commence at the beginning, or at the end of the policy. Table XLIII will give the values of $\lambda\ (vp)$.

By making the annual Premium P to be 0, the formula becomes applicable to paid-up Policies. Consequently one year before maturity, or just after the last annual premium is paid, the Reserve on every \$1 of endowment, will be v.

In the higher analysis, all the preceding formulas would be classed among "equations of finite differences of the first order;" which are always integrable,—Boole's Finite Differences, Ch. IX, Art. 8. But the integrals are already known in the Commutation and other forms.

THE CONTINUOUS METHOD.

Maclaurin, Euler, and many others have demonstrated the following standard formula, which will serve the double purpose of summation, and conversely of quadrature. First, let the values of the ordinate u be taken at the distance h from each other; and let U_h denote the special sum indicated; then

(A) $$h U_h = h \left(\tfrac{1}{2} u_0 + u_h + u_{2h} + \ldots + u_{(n-1)h} + \tfrac{1}{2} u_{nh} \right)$$

$$= C + \int u \, dx + \tfrac{1}{12} h^2 \cdot \frac{du}{dx} - \tfrac{1}{720} h^4 \cdot \frac{d^3 u}{dx^3} + \tfrac{1}{30240} h^6 \cdot \frac{d^5 u}{dx^5} - \ldots.$$

For the present applications, let nh fall beyond the oldest age of the life table, where u_{nh} and its differential coefficients all vanish. For, by Taylor's Theorem, when a continuous function becomes permanently zero beyond a certain limit, its derivatives

also vanish. Taking the integral of the right-hand member between the limits nh and 0, and making h to be 1,

$$U_1 = \int_0^{nh} u\,dx - \tfrac{1}{12}\cdot\frac{du_0}{dx} + \tfrac{1}{720}\cdot\frac{d^3u_0}{dx^3} - \ldots$$

· Subtracting this from the former equation integrated between the same limits, and transposing,

(B) $$U_1 = hU_h + \tfrac{1}{12}(h^2-1)\frac{du_0}{dx} - \tfrac{1}{720}(h^4-1)\frac{d^3u_0}{dx^3} + \ldots$$

APPLICATION TO LIFE ANNUITIES.—Referring back to the common formula $D_x\,a_x = N_{x+1} = D_{x+1} + D_{x+2} + \ldots$, let us here make $u_0 = D_x$, $u_1 = D_{x+1}$, etc. Then will $U_1 = \tfrac{1}{2}D_x + D_{x+1} + \ldots = \tfrac{1}{2}D_x + N_{x+1}$, and $U_h = \tfrac{1}{2}D_x + D_{x+h} + D_{x+2h} + \ldots$ Substituting in the formula (B), dividing by D_x, and reducing,

(C) $$a_x = \frac{h}{D_x}(D_{x+h} + D_{x+2h} + D_{x+3h} + \cdots) + \tfrac{1}{2}(h-1) - \tfrac{1}{12}(h^2-1)(\mu_x+\delta).$$

The values of D are given in the Commutation Tables, and the values of μ and δ, in Table XLIII. The latter represent the differential coefficient of D_x or $l_x v^x$, divided by D_x, that is, of log D_x; since $\mu = -d\,l_x \div l_x dx$, and $\delta = -\log v = \log(1+i)$. According to W. S. B. Woolhouse, the pioneer of this mode of calculation, in the *Journal*, Vol. XI, page 323, the best intervals to adopt for h, will be 5, 7, or 11 years. In the case of two Joint Lives, x, y, the derivative μ_x will become μ_{xy} or $\mu_x+\mu_y$; and so on.

Example.—Required the value of the life annuity a_x, when x is 60 years, and interest is 5 per cent.

$h = 11$; $\quad a_{60} = \dfrac{11}{D_{60}}(D_{71} + D_{82} + D_{93}) + 5. - 9.94(\mu_{60}+\delta) = 9.1322.$

$h = 7$; $\quad a_{60} = \dfrac{7}{D_{60}}(D_{67} + D_{74} + D_{81} + D_{88} + D_{95}) + 3. - 4(\mu_{60}+\delta) = 9.1336.$

The standard value from Table XXVIII is 9.1322. In the above formula for 11 year intervals, the last coefficient was arbitrarily changed from 10 to 9.94 to compensate for omitted terms. The annuity so computed for age 40 is 13.7601, which differs very slightly from the true value 13.7602. With this mode of amendment, devised by the writer, the intervals h may probably be taken so large that only two or three values of D will be needed. Thus for thirty-five or other ages adjacent:

$h = 20$; $\quad a_x = \dfrac{20}{D_x}(D_{x+20} + D_{x+40} + D_{x+60}) + 9.5 - 32.7023(\mu_x+\delta).$

Thus with slight correction of the last coefficient, through a single central value of a, this method (B) may also be extended to joint lives and survivorships; and further trials are invited.

INSTALMENTS.—Let h now designate a fraction $\dfrac{1}{m}$ of 1 year or of \$1 annuity; and let the equal instalments be payable at the *end* of each interval h or $\dfrac{1}{m}$ of the year. In formula (C), the present value of the 1st instalment is $D_{x+h} \div D_x$ when the

instalment is 1 ; or it is $h \times D_{x+h} \div D_x$ when the instalment is h or $\frac{1}{m}$; and so for the following terms of D, which evidently make up the required present value $a^{(m)}$. Therefore, substituting $1 \div m$ in place of h, and transposing the terms, we find the present value of the annuity payable in instalments of $\frac{1}{m}$ at the end of equal intervals $\frac{1}{m}$ of each year,

(D)
$$a_x^{(m)} = a_x + \frac{m-1}{2m} - \frac{m^2-1}{12m^2}(\mu_x + \delta).$$

By adding $\frac{1}{m}$, we evidently obtain the present value of the annuity payable m times a year *in advance*. This will also be the divisor of the single premium to give the premium of insurance by m annual instalments. The present addition of $\frac{1}{m}$ gives

(E)
$$a_x + \frac{m+1}{2m} - \frac{m^2-1}{12m^2}(\mu_x + \delta).$$

CONTINUOUS ANNUITIES $\bar{a}_x$. When the equal instalments are so small as to be payable momently, the corresponding value of the annuity, denoted by $\bar{a}_x$, is readily found from formula (D), by making the number of intervals m very great or infinite :

(F)
$$\bar{a}_x = a_x + \tfrac{1}{2} - \tfrac{1}{12}(\mu_x + \delta).$$

$$\bar{a}_{xy} = a_{xy} + \tfrac{1}{2} - \tfrac{1}{12}(\mu_x + \mu_y + \delta).$$

On the Survivor of Two Lives, $\bar{a}_{\overline{xy}} = \bar{a}_x + \bar{a}_y - \bar{a}_{xy},$

$$= a_x + a_y - a_{xy} + \tfrac{1}{2} - \frac{\delta}{12}.$$

Continuous Expectation of Life, $\bar{e}_x = e_x - \tfrac{1}{12}\mu_x.$

$$\bar{e}_{xy} = e_{xy} - \tfrac{1}{12}(\mu_x + \mu_y).$$

COMPLETE OR APPORTIONABLE ANNUITIES ca_x. The characteristic **c** is prefixed, when the annuity is to be paid with a proportionate part to the instant of death. A close and very simple approximation for this case has already been given in the Note of page 277; that is, $ca_x = a_x + \tfrac{1}{2}A_x = (1 - \tfrac{1}{2}iv)a_x + \tfrac{1}{2}v$. Here the proportionate part, defined by the actual day of death, is to be paid at what would be the time of the next regular instalment of annuity.

The more exact solution first investigated by Mr. Sprague is verified by Mr. Woolhouse in the *Journal*, Vol. XV, page 107, substantially as follows : Let x' denote the age at the beginning, and $x' + \frac{1}{m}$ at the end of any regular interval. And let $x' + t$ denote an intermediate age, increasing uniformly to $x' + \frac{1}{m}$, so that if death should occur, t will be the proportionate payment. By page 252, *ante*, and since M is a decreasing function, the single premium to insure this t during the instant dt, is $-t \cdot d\,M_{x'+t} \div D_x$. Or integrating by parts from $t = 0$, to $t = \frac{1}{m}$, we find the single premium to insure through this interval to be

$$-\frac{1}{m}\,\overline{\mathrm{M}}_{x'+\frac{1}{m}} + \int_0^{\frac{1}{m}} \overline{\mathrm{M}}_{x'+t}\,dt,$$

both terms to be divided by D_x. From this expression we next find the sum or single premium for all the intervals by formula (A), which gives the total augmentation of annuity:

$$= \left\{ \frac{1}{2m}\,\overline{\mathrm{M}}_x + \frac{1}{12m^2}\frac{d\,\overline{\mathrm{M}}_x}{dx} - \dots \right\} \div D_x = \frac{1}{2m}\,\overline{\mathrm{A}}_x - \frac{\mu_x}{12m^2}.$$

The mark over M denotes its continuous value; and so of the single premium A. It will presently be shown that $\overline{\mathrm{M}}_x \div D_x = \overline{\mathrm{A}}_x = 1 - \delta\,.\,\bar{a}_x$, where $\delta = \log\,(1+i)$; also that $d\,\overline{\mathrm{M}}_x = -v^x\,.\,dl_x$. Therefore, adding this augmentation to formula (D), we obtain the complete annuity payable with a proportionate part to the day of death:

(G)
$$\mathbf{c}a_x^{(m)} = \left(1 - \frac{\delta}{2m}\right)\bar{a}_x + \frac{\delta}{12m^2}$$

$$= \left(1 - \frac{\delta}{2m}\right)\left(a_x + \tfrac{1}{2} - \frac{\mu_x + \delta}{12}\right) + \frac{\delta}{12m^2}.$$

CHANGE FROM ORDINARY TO CONTINUOUS ANNUITIES AND PREMIUMS.—By simply changing the common annuity a_x to $a_x + \tfrac{1}{2}$, which will rarely require the slight further correction shown in formula (F), we obtain the continuous annuity $\bar{a}_x$. And conversely, $a_x = \bar{a}_x - \tfrac{1}{2}$, very nearly.

In respect to Premiums, the operations already explained on page 264, namely, $\overline{\mathrm{A}} = \mathrm{A} \div \sqrt{v}$, and $\mathrm{A} = \overline{\mathrm{A}}\,\sqrt{v}$, prove to be sufficiently exact in common practice. For illustration, a large variety of single premiums are represented by the well known formula, $\mathrm{A} = 1 - (1-v)(1+a)$. Eliminating the annuity a by comparison with the third type of continuous equation stated below, we have

(H)
$$\overline{\mathrm{A}} = \frac{\delta}{1-v}\mathrm{A} + \frac{\mu\delta}{12} = \frac{\mathrm{A}}{\sqrt{v}}\ \text{ nearly.}$$

At the age of 40 years, with 4 per cent. interest, $\mu\delta \div 12$ is 0.000030; and $\delta \div (1-v)$ differs from $\sqrt{v}$ by $i^2 \div 24$ nearly, which is 0.00006. These small terms being neglectible except in rare instances, the formula $\overline{\mathrm{A}} = \mathrm{A} \div \sqrt{v}$, is so far verified, with its converse $\mathrm{A} = \overline{\mathrm{A}}\,\sqrt{v}$.

FORMS OF CONTINUOUS SINGLE PREMIUMS.—Besides these simple modes of transformation, the continuous method presents the single premium under four new forms. As will be demonstrated presently, according to Mr. Woolhouse's analysis in the *Journal*, Vol. XV, pages 123, 409, the *first* form, separating the symbols of operation, is

(I)
$$\overline{\mathrm{A}} = \left(\mu_x - \frac{d}{dx}\right)\bar{a} + \left(\mu_y - \frac{d}{dy}\right)\bar{a} + \dots.$$

This type will be of general application, if $\overline{\mathrm{A}}$, $\bar{a}$, depend on all the lives; while x, y, $\dots$, designate only each life, by whose death the insurance would become payable. Thus,

$$\overline{\mathrm{A}}_x = \mu_x\bar{a}_x - \frac{d\bar{a}_x}{dx}; \qquad \overline{\mathrm{A}}_{xy} = (\mu_x + \mu_y)\,\bar{a}_{xy} - \frac{d\bar{a}_{xy}}{dx} - \frac{d\bar{a}_{xy}}{dy}; \quad \text{etc.}$$

$$\overline{A}^1_{xy} = \mu_x \bar{a}_{xy} - \frac{d\bar{a}_{xy}}{dx}; \qquad \overline{A}^{\ 1}_{xy} = \mu_y \bar{a}_{xy} - \frac{d\bar{a}_{xy}}{dy}.$$

$$\overline{A}^1_{xyz} = \mu_x \bar{a}_{xyz} - \frac{d\bar{a}_{xyz}}{dx}; \qquad \overline{A}^{\ 1}_{xyz} = \mu_y \bar{a}_{xyz} - \frac{d\bar{a}_{xyz}}{dy};$$

$$\overline{A}^{\ \ 1}_{xyz} = \mu_z \bar{a}_{xyz} - \frac{d\bar{a}_{xyz}}{dz}. \qquad \overline{A}^1_{xyz} + \overline{A}^{\ 1}_{xyz} + \overline{A}^{\ \ 1}_{xyz} = \overline{A}_{xyz}.$$

The *second* and *third* forms following apply exclusively to absolute assurances, having the common relation $A = 1 - (1-v)(1+a)$:

(J) $\qquad \overline{A}_x = 1 - \delta \bar{a}_x; \qquad \overline{A}_{xy} = 1 - \delta \bar{a}_{xy}; \qquad \overline{A}_{xyz} = 1 - \delta \bar{a}_{xyz};$ etc.

(K) $\qquad \overline{A}_x = \delta\left(\frac{1}{i} - a_x + \frac{\mu_x}{12}\right); \qquad \overline{A}_{xy} = \delta\left(\frac{1}{i} - a_{xy} + \frac{\mu_x + \mu_y}{12}\right);$ etc.

Here a denotes the ordinary tabular annuity; and in both, $\delta = $ Nap. log. $(1+i)$. The *fourth* type is but another form of the first, where $x, y, \ldots$, designate only each particular life, by whose death the insurance would become payable. Thus,

(L) $\qquad \overline{A}_x = -\frac{1}{l_x} \cdot \frac{d}{dx}(l_x \bar{a}_x); \qquad \overline{A}_{xy} = -\frac{1}{l_x} \cdot \frac{d}{dx}(l_x \bar{a}_{xy}) - \frac{1}{l_y} \cdot \frac{d}{dy}(l_y \bar{a}_{xy});$ etc.

$$\overline{A}^1_{xy} = -\frac{1}{l_x} \cdot \frac{d}{dx}(l_x \bar{a}_{xy}); \qquad \overline{A}^1_{xyz} = -\frac{1}{l_x} \cdot \frac{d}{dx}(l_x \bar{a}_{xyz});$$ etc.

The *derivatives* with respect to age, as x, which occur in the preceding equations, (unlike derivatives with respect to v), are here determined with sufficient accuracy by first differences. Thus,

$$-\frac{d\bar{a}_x}{dx} = \tfrac{1}{2}(a_{x-1} - a_{x+1}); \qquad -\frac{da_{xy}}{dx} - \frac{da_{xy}}{dy} = \tfrac{1}{2}(a_{x-1.y-1} - a_{x+1.y+1});$$ etc.

$$-\frac{d\bar{a}_{xy}}{dx} = \tfrac{1}{2}(a_{x-1\ y} - a_{x+1.y}); \qquad -\frac{d\bar{a}_{xy}}{dy} = \tfrac{1}{2}(a_{x.y-1} - a_{x.y+1});$$ etc.

$$\mu_x = -\frac{dl_x}{l_x} = \frac{l_{x-1} - l_{x+1}}{2l_x}. \qquad A^1_{xy} = \frac{l_{x-1}\bar{a}_{x-1.y} - l_{x+1}\bar{a}_{x+1.y}}{2l_x}.$$

As heretofore, the single premium, when divided by $1 + a_x$ for a single life, or by $1 + a_{xy}$ for two joint lives, will give the *annual premium*.

DEMONSTRATIONS.—It is shown in the Differential and Integral Calculus, in relation to the area of a curve whose ordinate is denoted by y, that $\int y dx$ represents the sum of $y \triangle x$, when the difference of abscissas $\triangle x$ is diminished to its limit. Accordingly, let the commutation $D_x = y$. In the common sum of annual values, $N_x = D_x + D_{x+1} + D_{x+2} + \ldots$, the value of $\triangle x$ is 1 year or 1. Diminishing $\triangle x$ to its limit dx or dt, we have the continuous value $\overline{N} = \int D_{x+t} dt$.

In the similar sum, $M_x = (l_x - l_{x+1}) v^{x+1} + (l_{x+1} - l_{x+2}) v^{x+2} + \ldots$, the value of $\triangle x$ is represented by $l_x - l_{x+1}$. Diminishing this $\triangle$ to its limit $-dl_x$, since l_x is a decreasing function, we obtain the continuous value; then integrating by parts,

$$\overline{\mathrm{M}} = -\int dl \cdot v^x = -lv^x + \log v \int lv^x \, dx,$$

$$= lv^x - \delta \int \mathrm{D} dx = \mathrm{D}_x - \delta \cdot \overline{\mathrm{N}}_x.$$

Dividing by D_x, we verify the second type of equations, before noted, $\overline{\mathrm{A}} = 1 - \delta \cdot \bar{a}$. For another standard example or application:

$$l_x \cdot \bar{a}_x = l_{x+t} \cdot v^t \cdot dt; \qquad l_x \cdot \overline{\mathrm{A}}_x = -\int v^t \cdot dl_{x+t}.$$

Integrating by parts, and observing that $v = \varepsilon^{\log v}$; $\delta = -\log v = \log (1 + i)$;

$$l_x \overline{\mathrm{A}}_x = -v^t \cdot l_{x+t} + \log v \int l_{x+t} \cdot v^t dt.$$

Applying the limits $t = \infty$ and $t = 0$, also substituting $l_x \bar{a}_x$ for its equal,

$$l_x \overline{\mathrm{A}}_x = l_x + \log v \cdot l_x \cdot \bar{a}_x; \qquad \overline{\mathrm{A}}_x = 1 - \delta \cdot \bar{a}_x.$$

In another form, noting the principle of the Calculus that $\dfrac{d \, l_{x+t}}{dx} = \dfrac{d \, l_{x+t}}{dt}$, and differentiating the first equation with respect to x, then substituting in the second,

$$l_x \cdot \overline{\mathrm{A}}_x = -\frac{d \, (l_x \, \bar{a}_x)}{dx}; \qquad \overline{\mathrm{A}}_x = \mu_x \, \bar{a}_x - \frac{d\bar{a}_x}{dx}.$$

By substitution of the common annuity, since $\dfrac{1}{\delta} = \dfrac{1}{i} + \dfrac{1}{2} - \dfrac{\delta}{12}$ nearly,

$$\overline{\mathrm{A}}_x = 1 - \delta \cdot \bar{a}_x = \delta \left(\frac{1}{i} - a_x + \frac{\mu_x}{12} \right).$$

In this manner the four previous forms of equation are demonstrated, and the methods of integration are general. For the insurance of \$1 payable on the death of x if y be living:

$$l_x l_y \, \bar{a}_{xy} = \int l_{x+t} l_{y+t} \cdot v^t \, dt;$$

$$l_x l_y \, \overline{\mathrm{A}}\overset{1}{\underset{xy}{}} = -\int l_{y+t} \, v^t \cdot d \, l_{x+t}.$$

For *three* lives, $\quad l_x l_y l_z \, \overline{\mathrm{A}}\overset{1}{\underset{xyz}{}} = -\int l_{y+t} l_{z+t} \, v^t \cdot d \, l_{x+t}.$

APPLICATIONS OF THE LAW OF MORTALITY.—The preceding results are evidently general, and adapted to any life table. But according to the law of Makeham, on page 237, with hyperbolic logarithms, the value of $\overline{\mathrm{N}}$ is found as follows:

$$\overline{\mathrm{N}}_x = \int \mathrm{D}_x \cdot dx = \int k \, (vs)^x \cdot \varepsilon^{-u} \cdot dx;$$

$$\text{if} \quad u = \log \frac{1}{y} \cdot q^x; \qquad du = \log q \cdot u dx.$$

Let $\qquad r = \dfrac{\log (vs)}{\log q} + 1. \qquad (vs)^x = \varepsilon^{x \log (vs)} = u^{r-1} \cdot \left(\log \frac{1}{y} \right)^{1-r}.$

Changing entirely from the variable x to u, we obtain the known form of the Gamma function, or second Eulerian integral, tabulated by Legendre, with an outline Table in De Morgan's Calculus, page 587. By the latter treatise, pages 577, 590:

$$\int_0^\infty \varepsilon^{-u}.u^{r-2}.du = \Gamma_{(r-1)} = \Gamma_{(r)} \div (r-1) = \Gamma_{(1+r)} \div r\,(r-1).$$

$$\int_0^u \varepsilon^{-u}.u^{r-2}.du = \frac{e^{-u}.u^{r-1}}{r-1} \left\{ 1 + \frac{u}{r} + \frac{u^2}{r\,(r+1)} + \frac{u^3}{r\,(r+1)\,(r+2)} + \dots \right\}.$$

Taking the difference, since $\int_u^\infty = \int_0^\infty - \int_0^u$, we have

(N)
$$\overline{N}_x = \frac{k\left(\log \dfrac{1}{g}\right)^{1-r}}{\log q} \int_u^\infty \varepsilon^{-u}.u^{r-2}.du$$

$$= -\frac{k\left(\log \dfrac{1}{g}\right)^{1-r}.\Gamma_{(1+r)}}{r.\log\dfrac{1}{vs}} + \frac{D_x}{\log\dfrac{1}{vs}} \left\{ 1 + \frac{u}{r} + \frac{u^2}{r\,(r+1)} + \frac{u^3}{r\,(r+1)\,(r+2)} + \dots \right\}.$$

Dividing by D_x, of course, gives the annuity $\bar{a}_x$. For numeric calculations, reference may be made to more full developments in the *Journal*, by Mr. Makeham, in volume XVII, page 305, and by Mr. McClintock, in volume XVIII, page 242. An interesting feature is the rapid convergence of the series in the earlier ages of manhood. At age 40, u is 0.030813; at 60, u is 0.20622; at 80, u is 1.3801.

Integration of (N) by parts will easily show the following *Relation between two life annuities*, at equal ages, but at rates of interest differing nearly 10 per cent., or as the rate of v differs from that of v'; the logarithms are hyperbolic:

$$\log\frac{1}{vs}.\bar{a}_v + u.\log q.\bar{a}_{v'} = 1; \qquad v' = vq; \qquad u = \log\frac{1}{g}.q^x.$$

DEMONSTRATION OF THE FORMULA OF SURVIVORSHIP INSURANCE ON P. 263. Having tabulated the coefficients a' and b', let us here adopt the notation, and the two auxiliary ages, x, y, stated on page 263. The probability of the m lives all surviving the time t is $\dfrac{l_{x'+t}.l_{x''+t}\ \cdots}{l_{x'}.l_{x''}.\dots}$ or $s^{mt}.g^{q^x\,(q^t-1)}$; and the probability of the n other lives surviving the time t is entirely similar. Hence by the same reasoning as for two single lives, x, y:

$$\overline{A}_{\frac{1}{(x'x''..)y'y''..}} = -\int \frac{d\,(l_{x'+t}.l_{x''+t}\ \cdots)}{l_{x'}.l_{x''}.\dots}.\frac{l_{y'+t}.l_{y''+t}.\cdots}{l_{y'}.l_{y''}.\dots}.v^t.$$

$$= -\int(m\log s.dt + \log g.q^x.dq^t).s^{(m+n)\,t}.g^{(q^x+q^y)(q^t-1)}.$$

Here the differential has been more conveniently found by the latter form of the identity $dl = l.d\log l = d\log l.l$. Interchanging the lives m and n,

$$\overline{A}_{\frac{1}{(y'y''..)x'x''..}} = -\int(n\log s.dt + \log g.q^y.dq^t)\,s^{(m+n)\,t}.g^{(q^x+q^y)(q^t-1)}.$$

Eliminating the last term of the two equations,

$$q^y\,\overline{A}_{\frac{1}{(x'x''..)y'y''..}} - q^x\,\overline{A}_{\frac{1}{(y'y''..)x'x''..}} = -(mq^y - nq^x)\log s.\bar{a}_{x'..y'..}.$$

At the end, $\bar{a}$ has been written in place of the equivalent integral on all the lives.

Also $\overline{A}\frac{1}{(x'x''..)y'y''..} + \overline{A}\frac{1}{(y'y''..)x'x''..} = \overline{A}_{x'..y'..}$ Eliminating the middle term by comparison with the preceding equation,

(S) $(q^x + q^y) \cdot \overline{A}\frac{1}{(x'x''..)y'y''..} = q^x \cdot \overline{A}_{x'..y'..} - (mq^y - nq^x) \log s \cdot \bar{a}_{x'..y'..}.$

Again, eliminating $\bar{a}$, by the relation $\overline{A}_{x'..y'..} = 1 - \delta\bar{a}_{x'..y'..}$, we obtain the general formula on page 263, which was to be demonstrated. Multiplying by $\sqrt{v}$ as there described,

$$a' = \frac{mq^{y-x} - n}{q^{y-x}+1} \cdot \frac{\sqrt{v}}{\delta} \cdot \log\frac{1}{s}; \qquad b' = \frac{m}{m+n} - \frac{mq^{y-x}-n}{q^{y-x}+1}\left(\frac{1}{m+n} + \frac{1}{\delta} \cdot \log\frac{1}{s}\right).$$

$$\overline{A}\frac{1}{xy} = a' + b'\overline{A}_{xy}.$$

The Table of a' and $\lambda b'$ on page 263 is based on the values $m = n = 1$. But if a'' and b'' denote the values in any case where the numbers of lives m and n are equal, we have $a'' = na'$; $b'' = b' - (n-1)\, a' \div \sqrt{v}$.

PROBABILITY OF SURVIVORSHIP. For two lives, the probability that y will survive x is strictly the value of $\overline{A}\frac{1}{xy}$ when v is 1, and δ is 0. The former equation $\overline{A} = 1 - \delta . \bar{a}$ thus becomes $\overline{A} = 1$; which is the proper result to be substituted in the preceding solution (S), also changing $\bar{a}_{xy}$ to $\bar{e}_{xy}$. The required value will always be $\frac{1}{2}$, when the ages are equal.

For a near approximation in other cases, let T denote the "Probable Life" of the age $x - 5$ years, given in Table XXVI. Then $l_{y-5+T} \div l_{y-5}$ will approximate to the probability $A\frac{1}{xy}$ that the younger life y will survive the older x. And $1 - A\frac{1}{xy}$ will be the opposite probability that the older will survive the younger. At the ages 50, 30, for example, $x - 5$ or 45 guides to T, 25.86. Whence $l_{y-5+T} \div l_{y-5}$ or $A\frac{1}{xy}$ is 0.785 ; and the chance that the older x will outlive the younger y is $1 - A\frac{1}{xy}$ or 0.215.

SOLUTION FOR SURVIVORSHIP ANNUITIES. The preceding expressions for a' and b' have the singular property of remaining constant for the duration of the given lives. Being easily tabulated, they appear adapted for an important part in the system of survivorships. For illustration, let the last problem on page 282 be resolved by this method. Firstly, supposing death to occur on an average at the middle of a policy year, and the first payment of annuity to the survivor to be made six months after, or at the end of the year, the present value may be considered equivalent to that of a continuous annuity commencing at death or survivorship.—Page 290.

PROBLEM.—To determine the present value of an annuity on the life of x, to commence with the failure of the joint existence of y and z, provided it be z who dies first.

Let $_{yz'}\bar{a}_x$ denote the required value. By the continuous method,

$$_{yz'}\bar{a}_x = -\int \frac{d\, l_{z+t} \cdot l_{y+t}\,\overline{N}_{x+t}}{l_z\, l_y\, D_x} = -\int \frac{d\, l_{z+t} \cdot l_{y+t} \cdot l_{x+t} \cdot v^t \cdot \bar{a}_{x+t}}{l_z\, l_y\, l_x},$$

$$= \int d A\frac{1}{z+t.y+t.x+t} \cdot \bar{a}_{x+t} = b'\int d\overline{A}_{z+t.y+t.x+t} \cdot \bar{a}_{x+t}.$$

Here the differentiation refers to the variable time t; and b' enters by the substitution of $a' + b'A$ from the previous investigation. Interchanging y and z,

$$y'z\bar{a}_x = b'' \int d\overline{A}_{z+t.y+t.x+t} \cdot \bar{a}_{x+t}.$$

Adding the last two equations, and substituting from page 280,

$$yz'\bar{a}_x + y'z\bar{a}_x = a_x - a_{xyz} = (b' + b'') \int d\overline{A}_{z+t.y+t\ x+t} \cdot \bar{a}_{x+t}.$$

Dividing the second preceding equation by this, and reducing,

The required annuity, $\quad yz'\bar{a}_x = \dfrac{b'}{b' + b''} (a_x - a_{xyz}).$

Let $$2q^u = q^x + q^y + q^z;$$

$$b' = F_{(u-z)} = \tfrac{1}{3} + (\tfrac{3}{2}q^{z-u} - 1)\left(\tfrac{1}{3} + \tfrac{1}{\delta} \log \tfrac{1}{s}\right).$$

Annuity, $\quad yz'\bar{a}_x = \dfrac{F_{(u-z)}}{1 - F_{(u-x)}} (a_x - a_{xyz}).$

The value of u may be found from Table LXV, page *204. Also the logarithm of the function F and of $1 - F$ can be easily tabulated by single entry, for the given rate of interest. And the method of integration is evidently adapted to survivorships involving four or any number of lives.

ADDITION TO SECTION VII.

TONTINES. Dividends of Annual Interest may be made to survivors of all ages, proportional to their deposits. Dividends from Mortality can be apportioned to the products of each Deposit $\times q_{x+n} \div p_{x+n}$ from Table XXVI; the shares being as if the Tontines were separate for each age.

NOTATION.

i = interest on \$1 or any other monetary unit for one year.

$v = \dfrac{1}{1+i}$ = the present value of 1 due a year hence.

$\delta = \log(1+i) = $ Nap log $(1+i)$, the nominal yearly rate of interest when compounded momently.

Log A $= \lambda$A $=$ notation for the common logarithm of A.

log A $=$ Nap log A $=$ notation for the hyperbolic or Napier logarithm.

$\varepsilon = 2.718\,281\,828 = $ the number whose hyperbolic logarithm is 1.

M $= \lambda\varepsilon = 0.434\,294\,482$.

λM $= \overline{1}.637\,784\,311$.

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l_x = number living according to the Life Table, at the precise age x.

$d_x = l_x - l_{x+1} = $ the number of persons dying between the ages x and $x+1$.

$l_{xy} = l_x . l_y = $ number living in the Joint Life Table at the combination of ages x, y.

$d_{xy} = l_{xy} - l_{x+1.y+1} = $ annual decrement in the Joint Life Table.

$p_x = \dfrac{l_{x+1}}{l_x} = \dfrac{l_x - d_x}{l_x} = $ the probability of a person whose age is x living *one* year.

$q_x = \dfrac{d_x}{l_x} = \dfrac{l_x - l_{x+1}}{l_x} = 1 - p_x = $ the probability of x dying within *one* year.

$p_{xy} = \dfrac{l_{x+1}.l_{y+1}}{l_x . l_y} = $ the probability of the joint existence of two lives x and y, continuing *one* year.

$q_{xy} = 1 - p_{xy} = $ the probability that one of the lives x, y, may die within *one* year.

$\mu_x = -\dfrac{d\,l_x}{l_x\,dx} = -\dfrac{d}{dx}\log l_x = $ *limiting ratio of mortality* at the age x,

$\mu_x = \dfrac{l_{x-1} - l_{x+1}}{2l_x} = \dfrac{d_{x-1} + d_x}{2l_x}$, approximately.

$p_{x,\,n} = \dfrac{l_{x+n}}{l_x} = $ the probability that a life aged x, may survive n years.

$1 - p_{x,\,n} = $ the probability of x dying within n years.

$p_{xy,\,n} = \dfrac{l_{x+n}.l_{y+n}}{l_x . l_y} = $ the probability that both x and y will survive n years.

$$c_x = \tfrac{1}{2} + \frac{l_{x+1} + l_{x+2} + \;\cdots\;}{l_x} = \text{the ``expectation'' or average duration of life.}$$

$e_x - \tfrac{1}{2} =$ the "curtate expectation" of life after the age x.

$\mathrm{T}_x =$ the "probable life" after the age x, defined by $l_{x+\mathrm{T}} = \tfrac{1}{2}l_\infty$.

$a_x =$ the present value of \$1 *Annuity* due *at the end* of each year during the life x.

$1 + a_x =$ the present value of \$1 annuity due *at the beginning* of each year during the life x.

$a_x^n =$ the present value of a *temporary* annuity for the next n years, if x shall so long live.

$1 + a_x^{n-1} =$ the value of the same, when the annuity is due *at the beginning* of each year.

$^n a_x =$ the present value of a *deferred* annuity; that is, of a life annuity on x to commence at the age $x + n$.

$a_{xy} =$ the value of an annuity during the joint existence of x and y.

$a_{\overline{xy}} = a_x + a_y - a_{xy} =$ the value of an annuity on the longest life.

$a_x^{(m)} =$ the value of \$1 annuity, when payable by m instalments in each year.

$\dfrac{1}{m} + a_x^{(m)} =$ the value of the same, when the instalments are payable in advance.

$c a_x^{(m)} =$ complete annuity providing for a proportionate payment to the day of death.

$\bar{a}_x =$ the value of a *continuous annuity* of \$1 per annum, for instalments supposed payable momently.

$\mathrm{A}_x =$ the single premium to insure \$1 payable at the end of the policy year in which x shall die.

π_x or $\mathrm{P}_x =$ annual premium to insure \$1 on the life of x. In some cases it denotes the premium to insure \$1000.

$\mathrm{A}_x^{(m)} =$ single premium of Endowment Insurance of \$1 for m years.

$\mathrm{A}^1_{\overline{xy}} =$ single premium of insurance "on x against y," that is, of \$1 payable on the death of x, if y be the survivor.

Note 1.—Generally x denotes the age of entry, when the risk commences; $x + n$ the age of valuation of the policy; and m or $n + m$ the total period of insurance.

The suffixes x, xy, ..., are often omitted where the meaning is obvious.

Note 2.—The notation relative to other conditions is usually explained on the several pages where it is introduced and applied.

INTERPOLATION BY FINITE DIFFERENCES.

From the series a, b, c, d, e, etc., whose terms are a unit's distance from each other, to find any intermediate term denoted by u:

Let x be the integral or the fractional distance of u from the first term a, and $\triangle$, $\triangle^2$, $\triangle^3$, etc., the first terms of the differences. That is,

$\triangle = b-a$, the first difference;

$\triangle^2 = c-2b+a$, the first of the second differences;

$\triangle^3 = d-3c+3b-a$, the first of the third differences; etc. Then,

$$u = a + x\triangle + \frac{x\,(x-1)}{2}\triangle^2 + \frac{x\,(x-1)\,(x-2)}{2\times 3}\triangle^3 + \frac{x\,(x-1)\,(x-2)\,(x-3)}{2\times 3\times 4}\triangle^4 + \ldots$$

NOTE.—The derivative $du \div dx$ at any point as at c, may be found by differentiating *with respect to u and x as the only* variables, and at c making $x=2$. The well known values of μ were thus found.

The first term a can generally be so located that the required term u shall be near the middle of the employed portion of the series.

DOUBLE INTERPOLATION.

Let U denote the term to be interpolated at the junction of x, y; where x is the horizontal, and y the vertical distance from the term a. We might apply the preceding formula to insert a term u at the distance x from a, then a term u' at the distance x from a', etc. The same formula applied to u, u', u'', ... would evidently give U at the vertical distance y from u. But the result will be the same, if

$\triangle = b-a$,	$\triangle^2 = (c-b) - (b-a)$,	
$\triangle' = b'-a'$,	etc.	
$\delta = a'-a$,	$\delta^2 = (a''-a') - (a'-a)$,	

a	b	c	d
a'	b'	c'	d'
a''	b''	c''	d''

$$U = a + x\triangle + y\delta + xy\,(\triangle'-\triangle) + \frac{x\,(x-1)}{2}\triangle^2 + \frac{y\,(y-1)}{2}\delta^2 + \ldots$$

NUMBERS OFTEN USED IN CALCULATIONS.

RATE OF INTEREST.	NUMBERS.		LOGARITHMS.	
	v.	$1-v$.	λv.	$\lambda\,(1-v)$.
3 per cent.	.9708 7379	.0291 2621	$\overline{1}$.987 1628	$\overline{2}$.464 2840
$3\frac{1}{2}$ " "	.9661 8357	.0338 1643	$\overline{1}$.985 0597	$\overline{2}$.529 1277
4 " "	.9615 3846	.0384 6154	$\overline{1}$.982 9667	$\overline{2}$.585 0267
$4\frac{1}{2}$ " "	.9569 3780	.0430 6220	$\overline{1}$.980 8837	$\overline{2}$.634 0962
5 " "	.9523 8095	.0476 1905	$\overline{1}$.978 8107	$\overline{2}$.677 7807
6 " "	.9433 9623	.0566 0377	$\overline{1}$.974 6941	$\overline{2}$.752 8454
7 " "	.9345 7944	.0654 2056	$\overline{1}$.970 6162	$\overline{2}$.815 7143
8 " "	.9259 2593	.0740 7407	$\overline{1}$.966 5762	$\overline{2}$.869 6662
9 " "	.9174 3119	.0825 6881	$\overline{1}$.962 5735	$\overline{2}$.916 8161
10 " "	.9090 9091	.0909 0909	$\overline{1}$.958 6073	$\overline{2}$.958 6073

TABLES IN PART SECOND.

TABLE XXVI.

MALE LIFE TABLE.   FROM EXPERIENCE OF LOSSES AND AMOUNTS INSURED.
EXPECTATION OF LIFE AND PROBABLE LIFE.

AGE. x.	Living. l_x.	Decrement. d_x.	Prob. of Dec. $q_x = \dfrac{d_x}{l_x}$.	Prob. of Living. $p_x = \dfrac{l_{x+1}}{l_x}$.	Expectation of Life. Years.	Probable Life. Years.	Age added to Expectation. Years.	AGE. x.
10	100,000	648	0.006479	0.993521	49.994	55.40	59.99	10
11	99,352	646	.006502	.993498	49.316	54.56	60.32	11
12	98,706	643	.006516	.993484	48.637	53.73	60.64	12
13	98,063	641	.006536	.993464	47.952	52.89	60.95	13
14	97,422	640	.006568	.993432	47.264	52.05	61.26	14
15	96,782	638	0.006593	0.993407	46.573	51.21	61.57	15
16	96,144	636	.006614	.993386	45.880	50.36	61.88	16
17	95,508	635	.006648	.993352	45.183	49.52	62.18	17
18	94,873	634	.006683	.993317	44.481	48.68	62.48	18
19	94,239	633	.006717	.993283	43.777	47.83	62.78	19
20	93,606	633	0.006763	0.993237	43.069	46.99	63.07	20
21	92,973	633	.006808	.993192	42.359	46.14	63.36	21
22	92,340	633	.006856	.993144	41.646	45.29	63.65	22
23	91,707	634	.006911	.993089	40.930	44.43	63.93	23
24	91,073	635	.006973	.993027	40.211	43.58	64.21	24
25	90,438	636	0.007032	0.992968	39.490	42.73	64.49	25
26	89,802	639	.007115	.992885	38.766	41.88	64.77	26
27	89,163	641	.007190	.992810	38.040	41.03	65.04	27
28	88,522	644	.007275	.992725	37.312	40.18	65.31	28
29	87,878	649	.007385	.992615	36.582	39.33	65.58	29
30	87,229	653	0.007485	0.992515	35.850	38.48	65.85	30
31	86,576	658	.007602	.992398	35.117	37.62	66.12	31
32	85,918	664	.007727	.992273	34.383	36.77	66.38	32
33	85,254	671	.007871	.992129	33.646	35.93	66.65	33
34	84,583	679	.008027	.991973	32.910	35.08	66.91	34
35	83,904	689	0.008212	0.991788	32.172	34.23	67.17	35
36	83,215	698	.008390	.991610	31.434	33.38	67.43	36
37	82,517	709	.008591	.991409	30.696	32.53	67.70	37
38	81,808	722	.008826	.991174	29.957	31.69	67.96	38
39	81,086	736	.009077	.990923	29.219	30.85	68.22	39
40	80,350	752	0.009360	0.990640	28.482	30.01	68.48	40
41	79,598	768	.009647	.990353	27.747	29.17	68.75	41
42	78,830	788	.009998	.990002	27.013	28.34	69.01	42
43	78,042	808	.010351	.989649	26.280	27.51	69.28	43
44	77,234	831	.010761	.989239	25.550	26.68	69.55	44
45	76,403	856	0.011203	0.988797	24.822	25.86	69.82	45
46	75,547	883	.011688	.988312	24.090	25.05	70.09	46
47	74,664	913	.012227	.987773	23.377	24.23	70.38	47
48	73,751	945	.012814	.987186	22.660	23.42	70.66	48
49	72,806	980	.013459	.986541	21.948	22.62	70.95	49
50	71,826	1,018	0.014175	0.985825	21.241	21.83	71.24	50
51	70,808	1,059	.014955	.985045	20.539	21.04	71.54	51
52	69,749	1,103	.015814	.984186	19.843	20.26	71.84	52
53	68,646	1,150	.016752	.983248	19.154	19.49	72.15	53
54	67,496	1,200	.017779	.982221	18.471	18.73	72.47	54

TABLE XXVI.

MALE LIFE TABLE. FROM EXPERIENCE OF LOSSES AND AMOUNTS INSURED.
EXPECTATION OF LIFE AND PROBABLE LIFE.

AGE. x.	Living. l_x.	Decrement. d_x.	Prob. of Dec. $q_x = \dfrac{d_x}{l_x}$.	Prob. of Living. $p_x = \dfrac{l_{x+1}}{l_x}$.	Expectation of Life. Years.	Probable Life. Years.	Age added to Expectation. Years.	AGE. x.
55	66,296	1,255	0.018930	0.981070	17.797	17.97	72.80	55
56	65,041	1,312	.020172	.979828	17.130	17.23	73.13	56
57	63,729	1,374	.021560	.978440	16.473	16.50	73.47	57
58	62,355	1,438	.023060	.976940	15.825	15.78	73.83	58
59	60,917	1,505	.024707	.975293	15.187	15.07	74.19	59
60	59,412	1,576	0.026527	0.973473	14.559	14.37	74.56	60
61	57,836	1,650	.028529	.971471	13.942	13.69	74.94	61
62	56,186	1,725	.030700	.969300	13.336	13.03	75.34	62
63	54,461	1,803	.033108	.966892	12.743	12.38	75.74	63
64	52,658	1,882	.035740	.964260	12.162	11.74	76.16	64
65	50,776	1,962	0.038640	0.961360	11.595	11.12	76.60	65
66	48,814	2,040	.041789	.958211	11.040	10.52	77.04	66
67	46,774	2,118	.045282	.954718	10.500	9.94	77.50	67
68	44,656	2,190	.049043	.950957	9.974	9.37	77.97	68
69	42,466	2,261	.053242	.946758	9.463	8.83	78.46	69
70	40,205	2,323	0.057778	0.942222	8.967	8.30	78.97	70
71	37,882	2,378	.062775	.937225	8.486	7.80	79.49	71
72	35,504	2,422	.068216	.931784	8.021	7.31	80.02	72
73	33,082	2,453	.074149	.925851	7.572	6.84	80.57	73
74	30,629	2,472	.080709	.919291	7.138	6.40	81.14	74
75	28,157	2,472	0.087792	0.912208	6.721	5.97	81.72	75
76	25,685	2,453	.095503	.904497	6.320	5.57	82.32	76
77	23,232	2,416	.103996	.896004	5.934	5.19	82.93	77
78	20,816	2,356	.113181	.886819	5.565	4.82	83.57	78
79	18,460	2,274	.123185	.876815	5.211	4.49	84.21	79
80	16,186	2,170	0.134068	0.865932	4.873	4.16	84.87	80
81	14,016	2,044	.145833	.854167	4.550	3.85	85.55	81
82	11,972	1,900	.158704	.841296	4.242	3.57	86.24	82
83	10,072	1,737	.172458	.827542	3.947	3.30	86.95	83
84	8,335	1,563	.187523	.812477	3.666	3.03	87.67	84
85	6,772	1,379	0.203633	0.796367	3.396	2.81	88.40	85
86	5,393	1,191	.220841	.779159	3.137	2.60	89.14	86
87	4,202	1,008	.239885	.760115	2.885	2.38	89.89	87
88	3,194	829	.259550	.740450	2.637	2.14	90.64	88
89	2,365	692	.292600	.707400	2.386	1.89	91.39	89
90	1,673	549	0.328154	0.671846	2.166	1.71	92.17	90
91	1,124	403	.358541	.641459	1.980	1.57	92.98	91
92	721	281	.389736	.610264	1.808	1.43	93.81	92
93	440	187	.425000	.575000	1.643	1.28	94.64	93
94	253	117	.462451	.537549	1.488	1.14	95.49	94
95	136	68	0.500000	0.500000	1.338	1.00	96.34	95
96	68	38	.558824	.441176	1.176	0.90	97.18	96
97	30	18	.600000	.400000	1.033	0.83	98.03	97
98	12	8	.666666	.333334	0.833	0.75	98.83	98
99	4	4	1.000000	.000000	0.500	0.50	99.50	99

TABLE XXVII.

COMMON LOGARITHMS (λ) OF THE PRECEDING LIFE TABLE.

AGE. x.	λl_x.	$\lambda\frac{1}{l_x}$.	λd_x.	λq_x.	λp_x.	$\lambda\frac{1}{p_x}$.	AGE. x.
10	5.000000	$\bar{5}$.000000	2.811575	$\bar{3}$.811575	$\bar{1}$.997177	0.002823	10
11	4.997177	.002823	.810233	.813056	7167	2833	11
12	.994344	.005656	.808211	.813867	7161	2839	12
13	.991505	.008495	.806858	.815353	7152	2848	13
14	.988657	.011343	.806180	.817523	7138	2862	14
15	4.985795	$\bar{5}$.014205	2.804821	$\bar{3}$.819026	$\bar{1}$.997127	0.002873	15
16	.982922	.017078	.803457	.820535	7118	2882	16
17	.980040	.019960	.802774	.822734	7103	2897	17
18	.977143	.022857	.802089	.824946	7088	2912	18
19	.974231	.025769	.801404	.827173	7073	2927	19
20	4.971304	$\bar{5}$.028696	2.801404	$\bar{3}$.830100	$\bar{1}$.997053	0.002947	20
21	.968357	.031643	.801404	.833047	7033	2967	21
22	.965390	.034610	.801404	.836014	7012	2988	22
23	.962402	.037598	.802089	.839687	6988	3012	23
24	.959390	.040610	.802774	.843384	6961	3039	24
25	4.956351	$\bar{5}$.043649	2.803457	$\bar{3}$.847106	$\bar{1}$.996935	0.003065	25
26	.953286	.046714	.805501	.852215	6899	3101	26
27	.950185	.049815	.806858	.856673	6866	3134	27
28	.947051	.052949	.808886	.861835	6829	3171	28
29	.943880	.056120	.812245	.868365	6781	3219	29
30	4.940661	$\bar{5}$.059339	2.814913	$\bar{3}$.874252	$\bar{1}$.996737	0.003263	30
31	.937398	.062602	.818226	.880828	6686	3314	31
32	.934084	.065916	.822168	.888084	6631	3369	32
33	.930715	.069285	.826723	.896008	6568	3432	33
34	.927283	.072717	.831870	.904587	6500	3500	34
35	4.923783	$\bar{5}$.076217	2.838219	$\bar{3}$.914436	$\bar{1}$.996419	0.003581	35
36	.920202	.079798	.843855	.923653	6341	3659	36
37	.916543	.083457	.850646	.934103	6253	3747	37
38	.912796	.087204	.858537	.945741	6150	3850	38
39	.908946	.091054	.866878	.957932	6040	3960	39
40	4.904986	$\bar{5}$.095014	2.876218	$\bar{3}$.971232	$\bar{1}$.995916	0.004084	40
41	.900902	.099098	.885361	.984459	5790	4210	41
42	.896692	.103308	.896526	.999834	5636	4364	42
43	.892328	.107672	.907411	$\bar{2}$.015083	5481	4519	43
44	.887809	.112191	.919601	.031792	5301	4699	44
45	4.883110	$\bar{5}$.116890	2.932474	$\bar{2}$.049364	$\bar{1}$.995107	0.004893	45
46	.878217	.121783	.945961	.067744	4894	5106	46
47	.873111	.126889	.960471	.087360	4657	5343	47
48	.867768	.132232	.975432	.107664	4399	5601	48
49	.862167	.137833	.991226	.129059	4115	5885	49
50	4.856282	$\bar{5}$.143718	3.007748	$\bar{2}$.151466	$\bar{1}$.993800	0.006200	50
51	.850082	.149918	.024896	.174814	3456	6544	51
52	.843538	.156462	.042576	.199038	3077	6923	52
53	.836615	,163385	.060698	.224083	2663	7337	53
54	.829278	.170722	.079181	.249903	2209	7791	54

TABLE XXVII.

COMMON LOGARITHMS (λ) OF THE PRECEDING LIFE TABLE.

AGE. x.	$\lambda l_x.$	$\lambda\frac{1}{l_x}.$	$\lambda d_x.$	$\lambda q_x.$	$\lambda p_x.$	$\lambda\frac{1}{p_x}.$	AGE. x.
55	4.821487	$\bar{5}$.178513	3.098644	$\bar{2}$.277157	$\bar{1}$.991700	0.008300	55
56	.813187	.186813	.117934	.304747	.991150	.008850	56
57	.804337	.195663	.137987	.333650	.990534	.009466	57
58	.794871	.205129	.157759	.362888	.989868	.010132	58
59	.784739	.215261	.177537	.392798	.989135	.010865	59
60	4.773874	$\bar{5}$.226126	3.197556	$\bar{2}$.423682	$\bar{1}$.988324	0.011676	60
61	.762198	.237802	.217484	.455286	.987430	.012570	61
62	.749628	.250372	.236789	.487161	.986458	.013542	62
63	.736086	.263914	.255996	.519910	.985378	.014622	63
64	.721464	.278536	.274620	.553156	.984194	.015806	64
65	4.705658	$\bar{5}$.294342	3.292699	$\bar{2}$.587041	$\bar{1}$.982886	0.017114	65
66	.688544	.311456	.309630	.621086	.981461	.018539	66
67	.670005	.329995	.325926	.655921	.979875	.020125	67
68	.649880	.350120	.340444	.690564	.978161	.021839	68
69	.628041	.371959	.354301	.726260	.976239	.023761	69
70	4.604280	$\bar{5}$.395720	3.366049	$\bar{2}$.761769	$\bar{1}$.974153	0.025847	70
71	.578433	.421567	.376212	.797779	.971844	.028156	71
72	.550277	.449723	.384174	.833897	.969315	.030685	72
73	.519592	.480408	.389698	.870106	.966541	.033459	73
74	.486133	.513867	.393049	.906916	.963453	.036547	74
75	4.449586	$\bar{5}$.550414	3.393049	$\bar{2}$.943463	1.960094	0.039906	75
76	.409680	.590320	.389698	.980018	.956407	.043593	76
77	.366087	.633913	.383097	1.017010	.953310	.047690	77
78	.318397	.681603	.372175	.053778	.947835	.052165	78
79	.266232	.733768	.356791	.090559	.942908	.057092	79
80	4.209140	$\bar{5}$.790860	3.336460	$\bar{1}$.127320	$\bar{1}$.937484	0.062516	80
81	.146624	.853376	.310481	.163857	.931543	.068457	81
82	.078167	.921833	.278754	.200587	.924949	.075051	82
83	.003116	.996884	.239800	.236684	.917790	.082210	83
84	3.920906	4.079094	.193959	.273053	.909811	.090189	84
85	3.830717	$\bar{4}$.169283	3.139564	$\bar{1}$.308847	$\bar{1}$.901113	0.098887	85
86	.731830	.268170	.075912	.344082	.891626	.108374	86
87	.623456	.376544	.003461	.380005	.880879	.119121	87
88	.504335	.495665	2.918555	.414220	.869496	.130504	88
89	.373831	.626169	.840106	.466275	.849665	.150335	89
90	3.223496	$\bar{4}$.776504	2.739572	$\bar{1}$.516076	$\bar{1}$.827270	0.172730	90
91	.050766	.949234	.605305	.554539	.807169	.192831	91
92	2.857935	3.142065	.448706	.590771	.785518	.214482	92
93	.643453	.356547	.271842	.628389	.759668	.240332	93
94	.403121	.596879	068186	.665065	.730418	.269582	94
95	2.133539	$\bar{3}$.866461	1.832509	$\bar{1}$.698970	$\bar{1}$.698970	0.301030	95
96	1.832509	$\bar{2}$.167491	.579784	.747275	.644612	.355388	96
97	.477121	.522879	.255273	.778152	.602060	.397940	97
98	.079181	.920819	0.903090	.823909	.522879	.477121	98
99	0.602060	1.397940	.602060	0.000000	$-\infty$	∞	99

TABLE XXVIII.

PRESENT VALUE (a) OF ANNUITY OF $1, PAYABLE AT THE END OF EACH YEAR DURING LIFE.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	10 Per Cent.	AGE.
10	23.7680	21.6018	19.7316	18.1334	16.7497	14.4869	12.7276	11.3299	9.2650	10
11	23.6406	21.5037	19.6547	18.0729	16.7018	14.4562	12.7074	11.3161	9.2580	11
12	23.5093	21.4020	19.5747	18.0098	16.6517	14.4238	12.6858	11.3014	9.2504	12
13	23.3732	21.2963	19.4912	17.9437	16.5990	14.3896	12.6629	11.2855	9.2422	13
14	23.2329	21.1867	19.4042	17.8745	16.5436	14.3533	12.6385	11.2686	9.2333	14
15	23.0881	21.0732	19.3138	17.8023	16.4856	14.3151	12.6125	11.2505	9.2238	15
16	22.9386	20.9555	19.2196	17.7270	16.4248	14.2747	12.5850	11.2312	9.2135	16
17	22.7840	20.8334	19.1216	17.6480	16.3609	14.2319	12.5556	11.2105	9.2023	17
18	22.6246	20.7069	19.0195	17.5656	16.2938	14.1868	12.5244	11.1884	9.1903	18
19	22.4602	20.5758	18.9133	17.4795	16.2236	14.1392	12.4913	11.1647	9.1774	19
20	22.2904	20.4400	18.8029	17.3896	16.1500	14.0889	12.4560	11.1394	9.1634	20
21	22.1154	20.2994	18.6882	17.2959	16.0730	14.0359	12.4187	11.1125	9.1483	21
22	21.9351	20.1539	18.5689	17.1981	15.9923	13.9800	12.3822	11.0838	9.1322	22
23	21.7491	20.0033	18.4450	17.0961	15.9079	13.9212	12.3373	11.0531	9.1148	23
24	21.5575	19.8475	18.3163	16.9898	15.8195	13.8591	12.2928	11.0204	9.0960	24
25	21.3601	19.6865	18.1827	16.8789	15.7271	13.7939	12.2427	10.9856	9.0758	25
26	21.1568	19.5197	18.0440	16.7634	15.6305	13.7250	12.1954	10.9485	9.0541	26
27	20.9476	19.3477	17.9002	16.6433	15.5296	13.6528	12.1426	10.9091	9.0309	27
28	20.7323	19.1700	17.7510	16.5182	15.4241	13.5768	12.0867	10.8671	9.0059	28
29	20.5107	18.9863	17.5964	16.3880	15.3140	13.4969	12.0276	10.8226	8.9791	29
30	20.2832	18.7970	17.4364	16.2529	15.1993	13.4131	11.9652	10.7753	8.9505	30
31	20.0492	18.6016	17.2706	16.1124	15.0797	13.3251	11.8993	10.7251	8.9198	31
32	19.8089	18.4002	17.0990	15.9664	14.9550	13.2328	11.8298	10.6718	8.8870	32
33	19.5621	18.1924	16.9214	15.8148	14.8250	13.1360	11.7565	10.6153	8.8518	33
34	19.3088	17.9786	16.7379	15.6576	14.6897	13.0346	11.6792	10.5555	8.8142	34
35	19.0490	17.7584	16.5483	15.4946	14.5490	12.9285	11.5979	10.4922	8.7741	35
36	18.7830	17.5321	16.3527	15.3259	14.4030	12.8176	11.5125	10.4254	8.7314	36
37	18.5101	17.2992	16.1507	15.1511	14.2510	12.7017	11.4226	10.3547	8.6858	37
38	18.2306	17.0599	15.9423	14.9702	14.0933	12.5804	11.3281	10.2800	8.6372	38
39	17.9448	16.8142	15.7276	14.7830	13.9297	12.4540	11.2290	10.2012	8.5855	39
40	17.6524	16.5621	15.5065	14.5897	13.7602	12.3222	11.1251	10.1182	8.5306	40
41	17.3538	16.3037	15.2792	14.3903	13.5847	12.1849	11.0163	10.0309	8.4723	41
42	17.0485	16.0387	15.0451	14.1844	13.4028	12.0418	10.9023	9.9389	8.4103	42
43	16.7372	15.7677	14.8050	13.9724	13.2151	11.8932	10.7832	9.8424	8.3447	43
44	16.4197	15.4903	14.5582	13.7538	13.0210	11.7387	10.6587	9.7410	8.2752	44
45	16.0963	15.2069	14.3052	13.5291	12.8208	11.5784	10.5289	9.6348	8.2018	45
46	15.7669	14.9174	14.0460	13.2981	12.6144	11.4121	10.3936	9.5234	8.1242	46
47	15.4321	14.6221	13.7806	13.0609	12.4017	11.2399	10.2527	9.4069	8.0423	47
48	15.0917	14.3212	13.5092	12.8176	12.1829	11.0618	10.1061	9.2853	7.9560	48
49	14.7463	14.0149	13.2320	12.5683	11.9582	10.8777	9.9540	9.1583	7.8652	49
50	14.3959	13.7033	12.9490	12.3129	11.7274	10.6877	9.7960	9.0258	7.7698	50
51	14.0410	13.3869	12.6606	12.0521	11.4908	10.4918	9.6325	8.8881	7.6696	51
52	13.6818	13.0658	12.3669	11.7857	11.2485	10.2902	9.4632	8.7449	7.5647	52
53	13.3187	12.7403	12.0682	11.5139	11.0007	10.0829	9.2883	8.5962	7.4549	53
54	12.9519	12.4109	11.7648	11.2370	10.7475	9.8699	9.1079	8.4421	7.3401	54

FORMULA, $a_x = \dfrac{N_{x+1}}{D_x}$.

TABLE XXVIII.

PRESENT VALUE (*a*) OF ANNUITY OF $1, PAYABLE AT THE END OF EACH YEAR
DURING LIFE.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.	7 Per Cent.	8 Per Cent.	10 Per Cent.	AGE.
55	12.5820	12.0778	11.4569	10.9552	10.4892	9.6515	8.9218	8.2825	7.2203	55
56	12.2095	11.7418	11.1451	10.6691	10.2262	9.4280	8.7305	8.1177	7.0955	56
57	11.8347	11.4029	10.8295	10.3788	9.9586	9.1994	8.5340	7.9476	6.9658	57
58	11.4583	11.0621	10.5108	10.0848	9.6869	8.9663	8.3326	7.7725	6.8312	58
59	11.0806	10.7195	10.1893	9.7874	9.4113	8.7286	8.1263	7.5925	6.6916	59
60	10.7021	10.2696	9.8653	9.4869	9.1322	8.4867	7.9155	7.4076	6.5473	60
61	10.3236	9.9187	9.5395	9.1839	8.8501	8.2410	7.7003	7.2182	6.3983	61
62	9.9456	9.5674	9.2125	8.8791	8.5655	7.9920	7.4813	7.0246	6.2448	62
63	9.5684	9.2158	8.8844	8.5725	8.2787	7.7398	7.2585	6.8268	6.0868	63
64	9.1929	8.8650	8.5562	8.2650	7.9902	7.4851	7.0326	6.6254	5.9248	64
65	8.8197	8.5154	8.2282	7.9571	7.7007	7.2283	6.8037	6.4206	5.7588	65
66	8.4494	8.1676	7.9013	7.6493	7.4107	6.9700	6.5726	6.2130	5.5893	66
67	8.0824	7.8222	7.5757	7.3422	7.1206	6.7104	6.3394	6.0027	5.4164	67
68	7.7198	7.4799	7.2525	7.0365	6.8313	6.4504	6.1049	5.7904	5.2406	68
69	7.3614	7.1410	6.9315	6.7323	6.5428	6.1901	5.8691	5.5762	5.0620	69
70	7.0087	6.8066	6.6142	6.4309	6.2562	5.9305	5.6331	5.3609	4.8813	70
71	6.6616	6.4768	6.3006	6.1324	5.9719	5.6718	5.3970	5.1448	4.6987	71
72	6.3210	6.1525	5.9915	5.8376	5.6905	5.4148	5.1616	4.9286	4.5147	72
73	5.9873	5.8340	5.6873	5.5469	5.4124	5.1599	4.9273	4.7126	4.3298	73
74	5.6608	5.5218	5.3885	5.2607	5.1382	4.9075	4.6944	4.4972	4.1442	74
75	5.3425	5.2168	5.0961	4.9801	4.8687	4.6586	4.4640	4.2834	3.9588	75
76	5.0324	4.9190	4.8100	4.7051	4.6042	4.4134	4.2362	4.0712	3.7738	76
77	4.7307	4.6287	4.5306	4.4360	4.3448	4.1722	4.0113	3.8612	3.5895	77
78	4.4381	4.3468	4.2587	4.1737	4.0916	3.9358	3.7903	3.6541	3.4067	78
79	4.1547	4.0731	3.9943	3.9181	3.8445	3.7044	3.5732	3.4501	3.2256	79
80	3.8806	3.8079	3.7376	3.6696	3.6038	3.4783	3.3605	3.2496	3.0467	80
81	3.6158	3.5514	3.4890	3.4285	3.3699	3.2579	3.1524	3.0529	2.8702	81
82	3.3601	3.3032	3.2480	3.1945	3.1425	3.0429	2.9489	2.8601	2.6963	82
83	3.1138	3.0638	3.0152	2.9679	2.9220	2.8340	2.7506	2.6716	2.5254	83
84	2.8756	2.8318	2.7893	2.7478	2.7075	2.6300	2.5565	2.4866	2.3568	84
85	2.6455	2.6074	2.5704	2.5343	2.4990	2.4313	2.3668	2.3053	2.1909	85
86	2.4216	2.3888	2.3567	2.3255	2.2950	2.2361	2.1800	2.1264	2.0262	86
87	2.2012	2.1731	2.1457	2.1189	2.0927	2.0421	1.9937	1.9474	1.8606	87
88	1.9827	1.9590	1.9357	1.9130	1.8908	1.8478	1.8065	1.7669	1.6925	88
89	1.7581	1.7383	1.7189	1.6999	1.6813	1.6452	1.6105	1.5772	1.5143	89
90	1.5598	1.5432	1.5270	1.5111	1.4955	1.4652	1.4361	1.4080	1.3548	90
91	1.3913	1.3774	1.3638	1.3504	1.3373	1.3117	1.2871	1.2633	1.2182	91
92	1.2340	1.2225	1.2111	1.1999	1.1890	1.1676	1.1470	1.1270	1.0890	92
93	1.0828	1.0733	1.0639	1.0547	1.0457	1.0281	1.0110	.9945	.9629	93
94	.9395	.9319	.9243	.9169	.9096	.8953	.8814	.8679	.8421	94
95	.8002	.7942	.7883	.7825	.7767	.7654	.7544	.7438	.7233	95
96	.6485	.6440	.6397	.6353	.6310	.6227	.6145	.6065	.5912	96
97	.5140	.5109	.5079	.5049	.5019	.4960	.4903	.4847	.4841	97
98	.3236	.3221	.3205	.3190	.3175	.3145	.3115	.3087	.3031	98
99	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	99

TABLE XXIX.

ANNUAL PREMIUM (π) TO INSURE $1000, PAYABLE AT THE END OF THE POLICY YEAR IN WHICH THE LIFE FAILS.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.	AGE.
10	11.2486	10.4447	9.7739	9.2026	8.7201	7.9672	10
11	11.4571	10.6384	9.9535	9.3682	8.8723	8.0952	11
12	11.6747	10.8410	10.1419	9.5422	9.0327	8.2308	12
13	11.9023	11.0534	10.3400	9.7260	9.2026	8.3754	13
14	12.1400	11.2759	10.5480	9.9194	9.3819	8.5289	14
15	12.3881	11.5085	10.7660	10.1227	9.5709	8.6913	15
16	12.6474	11.7524	10.9953	10.3369	9.7706	8.8640	16
17	12.9188	12.0083	11.2364	10.5629	9.9819	9.0478	17
18	13.2025	12.2763	11.4897	10.8010	10.2050	9.2428	18
19	13.4993	12.5574	11.7560	11.0518	10.4407	9.4499	19
20	13.8099	12.8522	12.0361	11.3163	10.6899	9.6701	20
21	14.1349	13.1614	12.3304	11.5950	10.9531	9.9037	21
22	14.4752	13.4857	12.6399	11.8887	11.2311	10.1517	22
23	14.8317	13.8261	12.9656	12.1985	11.5251	10.4152	23
24	15.2050	14.1835	13.3082	12.5250	11.8357	10.6949	24
25	15.5963	14.5586	13.6687	12.8696	12.1641	10.9919	25
26	16.0068	14.9530	14.0485	13.2333	12.5117	11.3079	26
27	16.4369	15.3669	14.4479	13.6166	12.8786	11.6426	27
28	16.8883	15.8021	14.8689	14.0214	13.2671	11.9986	28
29	17.3623	16.2597	15.3125	14.4487	13.6780	12.3769	29
30	17.8592	16.7403	15.7791	14.8991	14.1119	12.7777	30
31	18.3814	17.2461	16.2712	15.3751	14.5713	13.2038	31
32	18.9302	17.7785	16.7902	15.8779	15.0575	13.6566	32
33	19.5070	18.3389	17.3376	16.4092	15.5722	14.1376	33
34	20.1136	18.9289	17.9149	16.9706	16.1170	14.6487	34
35	20.7516	19.5504	18.5241	17.5638	16.6936	15.1916	35
36	21.4224	20.2045	19.1663	18.1901	17.3035	15.7674	36
37	22.1294	20.8947	19.8452	18.8533	17.9504	16.3801	37
38	22.8743	21.6226	20.5624	19.5549	18.6357	17.0316	38
39	23.6590	22.3903	21.3199	20.2971	19.3616	17.7235	39
40	24.4863	23.2003	22.1206	21.0825	20.1309	18.4590	40
41	25.3587	24.0552	22.9667	21.9137	20.9462	19.2406	41
42	26.2802	24.9588	23.8627	22.7949	21.8117	20.0726	42
43	27.2524	25.9128	24.8099	23.7276	22.7287	20.9564	43
44	28.2801	26.9217	25.8133	24.7167	23.7026	21.8972	44
45	29.3662	27.9887	26.8757	25.7651	24.7359	22.8979	45
46	30.5150	29.1173	28.0014	26.8771	25.8330	23.9627	46
47	31.7306	30.3122	29.1948	28.0572	26.9985	25.0962	47
48	33.0174	31.5772	30.4602	29.3094	28.2364	26.3026	48
49	34.3809	32.9177	31.8029	30.6395	29.5524	27.5876	49
50	35.8261	34.3385	33.2283	32.0524	30.9517	28.9564	50
51	37.3590	35.8450	34.7419	33.5538	32.4399	30.4147	51
52	38.9855	37.4432	36.3501	35.1505	34.0235	31.9688	52
53	40.7128	39.1397	38.0599	36.8490	35.7093	33.6257	53
54	42.5485	40.9412	39.8789	38.6571	37.5051	35.3931	54

FORMULA, $\quad \pi_x = \dfrac{1000 M_x}{N_x} = 1000 \left\{ \dfrac{1}{1 + a_x} - (1 - v) \right\}.$

TABLE XXIX.

ANNUAL PREMIUM (π) TO INSURE $1000, PAYABLE AT THE END OF THE POLICY YEAR IN WHICH THE LIFE FAILS.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.	AGE.
55	44.5008	42.8559	41.8154	40.5834	39.4191	37.2798	55
56	46.5771	44.8899	43.8764	42.6342	41.4585	39.2920	56
57	48.7878	47.0532	46.0730	44.8211	43.6340	41.4411	57
58	51.1416	49.3527	48.4132	47.1516	45.9537	43.7349	58
59	53.6509	51.7999	50.9095	49.6389	48.4302	46.1862	59
60	56.3282	54.9175	53.5745	52.2951	51.0760	48.8073	60
61	59.1848	57.7696	56.4196	55.1317	53.9026	51.6097	61
62	62.2349	60.8148	59.4582	58.1621	56.9232	54.6062	62
63	65.4953	64.0706	62.7079	61.4038	60.1552	57.8148	63
64	68.9809	67.5521	66.1832	64.8709	63.6129	61.2493	64
65	72.7102	71.2769	69.9017	68.5817	67.3143	64.9276	65
66	76.7006	75.2633	73.8817	72.5538	71.2768	68.8667	66
67	80.9763	79.5344	78.1464	76.8106	75.5240	73.0907	67
68	85.5559	84.1089	82.7146	81.3703	80.0741	77.6169	68
69	90.4709	89.0189	87.6177	86.2649	84.9587	82.4772	69
70	95.7386	94.2812	92.8725	91.5105	90.1937	87.6870	70
71	101.395	99.9310	98.5145	97.1422	95.8145	93.2814	71
72	107.467	105.996	104.570	103.188	101.848	99.2869	72
73	113.991	112.511	111.075	109.682	108.329	105.738	73
74	121.006	119.516	118.069	116.663	115.296	112.673	74
75	128.540	127.039	125.579	124.158	122.776	120.118	75
76	136.645	135.131	133.656	132.219	130.819	128.123	76
77	145.373	143.843	142.352	140.897	139.477	136.739	77
78	154.760	153.212	151.701	150.225	148.784	145.998	78
79	164.871	163.302	161.769	160.269	158.802	155.964	79
80	175.769	174.174	172.614	171.087	169.592	166.694	80
81	187.521	185.898	184.307	182.749	181.221	178.257	81
82	200.225	198.567	196.942	195.348	193.783	190.743	82
83	213.958	212.260	210.594	208.958	207.351	204.224	83
84	228.899	227.155	225.442	223.759	222.103	218.877	84
85	245.187	243.390	241.622	239.883	238.173	234.835	85
86	263.137	261.279	259.448	257.648	255.874	252.409	86
87	283.260	281.333	279.436	277.565	275.722	272.117	87
88	306.139	304.140	302.168	300.223	298.305	294.543	88
89	333.449	331.380	329.342	327.326	325.339	321.442	89
90	361.532	359.385	357.261	355.167	353.099	349.040	90
91	389.061	386.811	384.586	382.396	380.228	375.972	91
92	418.501	416.137	413.801	411.495	409.214	404.733	92
93	451.009	448.516	446.049	443.614	441.206	436.468	93
94	486.462	483.818	481.198	478.615	476.056	471.023	94
95	526.353	523.527	520.729	517.963	515.226	509.839	95
96	577.487	574.439	571.434	568.437	565.488	559.670	96
97	631.366	628.022	624.715	621.445	618.210	611.838	97
98	726.375	722.578	718.820	715.099	711.420	704.177	98
99	970.868	966.189	861.537	956.947	952.384	943.405	99

TABLE XXX.

SINGLE PREMIUM (A) TO INSURE $1,000, PAYABLE AT THE END OF THE POLICY YEAR IN WHICH THE LIFE FAILS.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.	AGE.
10	278.604	236.069	202.630	176.078	154.779	123.387	10
11	282.310	239.403	205.587	178.678	157.055	125.120	11
12	286.139	242.859	208.665	181.396	159.443	126.951	12
13	290.098	246.450	211.878	184.246	161.956	128.893	13
14	294.189	250.175	215.224	187.224	164.593	130.946	14
15	298.404	254.030	218.699	190.329	167.352	133.108	15
16	302.761	258.031	222.321	193.579	170.250	135.395	16
17	307.260	262.181	226.095	196.977	173.294	137.815	17
18	311.903	266.480	230.019	200.526	176.483	140.369	18
19	316.695	270.935	234.101	204.232	179.827	143.064	19
20	321.639	275.552	238.349	208.103	183.332	145.911	20
21	326.735	280.329	242.763	212.140	187.001	148.911	21
22	331.989	285.275	247.348	216.351	190.842	152.072	22
23	337.407	290.395	252.116	220.745	194.865	155.407	23
24	342.986	295.690	257.065	225.322	199.071	158.917	24
25	348.735	301.166	262.203	230.094	203.470	162.613	25
26	354.658	306.832	267.540	235.069	208.075	166.508	26
27	360.751	312.680	273.069	240.241	212.878	170.597	27
28	367.023	318.727	278.806	245.629	217.899	174.901	28
29	373.475	324.971	284.756	251.234	223.143	179.426	29
30	380.101	331.407	290.909	257.053	228.603	184.166	30
31	386.914	338.051	297.284	263.104	234.301	189.146	31
32	393.916	344.905	303.886	269.391	240.242	194.372	32
33	401.104	351.967	310.714	275.917	246.430	199.850	33
34	408.482	359.244	317.773	282.688	252.871	205.589	34
35	416.049	366.733	325.066	289.707	259.570	211.595	35
36	423.799	374.432	332.588	296.970	266.526	217.868	36
37	431.748	382.357	340.359	304.501	273.761	224.435	37
38	439.886	390.502	348.373	312.294	281.273	231.296	38
39	448.214	398.864	356.630	320.349	289.063	238.453	39
40	456.727	407.446	365.134	328.672	297.136	245.915	40
41	465.427	416.243	373.879	337.259	305.493	253.685	41
42	474.317	425.266	382.879	346.127	314.150	261.783	42
43	483.382	434.498	392.119	355.257	323.091	270.195	43
44	492.630	443.947	401.608	364.666	332.333	278.941	44
45	502.052	453.608	411.338	374.344	341.868	288.018	45
46	511.642	463.473	421.309	384.292	351.699	297.427	46
47	521.399	473.540	431.516	394.509	361.825	307.175	47
48	531.308	483.802	441.953	404.985	372.239	317.257	48
49	541.371	494.255	452.618	415.724	382.945	327.678	49
50	551.574	504.889	463.500	426.712	393.934	338.432	50
51	561.916	515.697	474.594	437.949	405.201	349.520	51
52	572.377	526.667	485.889	449.423	416.738	360.933	52
53	582.952	537.792	497.376	461.124	428.538	372.669	53
54	593.632	549.060	509.046	473.048	440.592	384.721	54

FORMULA, $A_x = \dfrac{1000\,M_x}{D_x} = 1000\left\{1 - (1-v)\,(1+a_x)\right\}.$

TABLE XXX.

SINGLE PREMIUM (A) TO INSURE $1,000, PAYABLE AT THE END OF THE POLICY YEAR IN WHICH THE LIFE FAILS.

AGE.	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.	AGE.
55	604.410	560.462	520.890	485.184	452.895	397.085	55
56	615.259	571.976	532.882	497.502	465.421	409.736	56
57	626.174	583.596	545.019	510.008	478.165	422.674	57
58	637.137	595.295	557.277	522.666	491.101	435.873	58
59	648.137	607.069	569.642	535.472	504.222	449.325	59
60	659.160	618.901	582.103	548.412	517.514	463.019	60
61	670.187	630.769	594.636	561.458	530.947	476.925	61
62	681.197	642.651	607.214	574.587	544.499	491.020	62
63	692.182	654.535	619.829	587.787	558.159	505.290	63
64	703.118	666.403	632.458	601.030	571.895	519.709	64
65	713.991	678.225	645.069	614.291	585.681	534.246	65
66	724.776	689.986	657.643	627.542	599.490	548.868	66
67	735.462	701.665	670.162	640.767	613.303	563.560	67
68	746.028	713.239	682.598	653.931	627.081	578.278	68
69	756.464	724.701	694.941	667.029	640.823	593.017	69
70	766.738	736.011	707.148	680.010	654.466	607.711	70
71	776.848	747.162	719.211	692.861	668.007	622.352	71
72	786.769	758.131	731.099	705.558	681.408	636.901	72
73	796.488	768.897	742.795	718.075	694.647	651.328	73
74	805.996	779.455	754.288	730.397	707.706	665.613	74
75	815.267	789.771	765.535	742.484	720.536	679.701	75
76	824.297	799.840	776.539	754.324	733.133	693.581	76
77	833.086	809.653	787.285	765.914	745.482	707.235	77
78	841.606	819.189	797.743	777.213	757.544	720.616	78
79	849.863	828.446	807.914	788.216	769.311	733.713	79
80	857.847	837.410	817.783	798.914	780.770	746.509	80
81	865.558	846.089	827.346	809.299	791.910	758.990	81
82	873.004	854.480	836.614	819.377	802.738	771.156	82
83	880.181	862.577	845.569	829.131	813.237	782.984	83
84	887.117	870.420	854.256	838.610	823.450	794.528	84
85	893.822	878.011	862.677	847.807	833.376	805.777	85
86	900.343	885.407	870.893	856.799	843.098	816.823	86
87	906.761	892.697	879.012	865.693	852.727	827.805	87
88	913.125	899.941	887.089	874.559	862.341	838.786	88
89	919.670	907.403	895.433	883.737	872.320	850.272	89
90	925.444	914.000	902.805	891.865	881.165	860.459	90
91	930.356	919.606	909.076	898.785	888.700	869.147	91
92	934.934	924.845	914.958	905.268	895.761	877.308	92
93	939.338	929.891	920.617	911.517	902.585	885.201	93
94	943.509	934.674	925.985	917.453	909.065	892.719	94
95	947.563	939.325	931.219	923.245	915.396	900.072	95
96	951.985	944.407	936.936	929.580	922.331	908.151	96
97	955.903	948.903	942.005	935.197	928.483	915.324	97
98	961.449	955.294	949.212	943.203	937.266	925.612	98
99	970.868	966.189	961.537	956.947	952.384	943.405	99

TABLE XXXI.

REVERSION, OR LIFE INSURANCE EQUIVALENT TO SINGLE PREMIUM OF 1.

AGE.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.	AGE.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.
10	3.5893	4.2360	4.9351	5.6793	6.4608	8.1046	55	1.6545	1.7842	1.9198	2.0611	2.2080	2.5184
11	.5422	.1771	.8641	.5967	.3672	7.9923	56	.6253	.7483	.8766	.0100	.1486	.4406
12	.4948	.1177	.7924	.5128	.2718	.8771	57	.5970	.7135	.8348	1.9608	.0913	.3659
13	.4471	.0576	.7197	.4275	.1745	.7584	58	.5695	.6798	.7944	.9133	.0362	.2942
14	.3992	3.9972	.6463	.3412	.0756	.6367	59	.5429	.6473	.7555	.8675	1.9833	.2256
15	3.3512	3.9366	4.5725	5.2541	5.9754	7.5127	60	1.5171	1.6158	1.7179	1.8234	1.9323	2.1597
16	.3029	.8755	.4980	.1659	.8737	.3858	61	.4921	.5854	.6817	.7811	.8834	.0968
17	.2545	.8142	.4229	.0767	.7705	.2561	62	.4680	.5561	.6469	.7404	.8366	.0366
18	.2061	.7527	.3475	4.9869	.6663	.1241	63	.4447	.5278	.6133	.7013	.7916	1.9791
19	.1576	.6910	.2717	.8964	.5609	6.9899	64	.4222	.5006	.5811	.6638	.7486	.9242
20	3.1091	3.6291	4.1955	4.8053	5.4546	6.8535	65	1.4006	1.4745	1.5502	1.6279	1.7074	1.8718
21	.0606	.5672	.1192	.7139	.3476	.7154	66	.3797	.4493	.5206	.5935	.6681	.8219
22	.0122	.5054	.0429	.6221	.2399	.5758	67	.3597	.4252	.4922	.5606	.6305	.7744
23	2.9638	.4436	3.9664	.5301	.1318	.4347	68	.3404	.4021	.4650	.5292	.5947	.7293
24	.9155	.3819	.8901	.4381	.0233	.2926	69	.3219	.3799	.4390	.4992	.5605	.6863
25	2.8675	3.3204	3.8138	4.3461	4.9147	6.1496	70	1.3042	1.3587	1.4141	1.4706	1.5280	1.6455
26	.8196	.2591	.7378	.2541	.8060	.0057	71	.2872	.3384	.3904	.4433	.4970	.6068
27	.7720	.1982	.6621	.1625	.6975	5.8618	72	.2710	.3190	.3678	.4173	.4675	.5701
28	.7246	.1375	.5867	.0712	.5893	.7175	73	.2555	.3006	.3463	.3926	.4396	.5353
29	.6776	.0772	.5118	3.9804	.4814	.5733	74	.2407	.2830	.3258	.3691	.4130	.5024
30	2.6309	3.0174	3.4375	3.8902	4.3744	5.4299	75	1.2266	1.2662	1.3063	1.3468	1.3879	1.4712
31	.5846	2.9581	.3638	.8008	.2680	.2869	76	.2132	.2503	.2878	.3257	.3640	.4418
32	.5386	.8993	.2907	.7121	.1625	.1448	77	.2004	.2351	.2702	.3056	.3414	.4140
33	.4931	.8412	.2184	.6243	.0579	.0038	78	.1882	.2207	.2535	.2866	.3201	.3877
34	.4481	.7836	.1469	.5375	3.9546	4.8641	79	.1767	.2071	.2378	.2687	.2999	.3629
35	2.4036	2.7268	3.0763	3.4518	3.8525	4.7260	80	1.1657	1.1942	1.2228	1.2517	1.2808	1.3396
36	.3596	.6707	.0067	.3673	.7520	.5899	81	.1553	.1819	.2087	.2356	.2628	.3175
37	.3162	.6154	2.9381	.2841	.6528	.4556	82	.1455	.1703	.1953	.2204	.2457	.2968
38	.2733	.5608	.8705	.2021	.5553	.3235	83	.1361	.1593	.1826	.2061	.2297	.2772
39	.2311	.5071	.8040	.1216	.4595	.1937	84	.1272	.1489	.1706	.1924	.2144	.2586
40	2.1895	2.4543	2.7387	3.0425	3.3655	4.0664	85	1.1188	1.1389	1.1592	1.1795	1.1999	1.2410
41	.1486	.4024	.6747	2.9651	.2734	3.9419	86	.1107	.1294	.1482	.1671	.1861	.2243
42	.1083	.3515	.6118	.8891	.1832	.8200	87	.1028	.1202	.1376	.1551	.1727	.2080
43	.0688	.3015	.5502	.8149	.0951	.7010	88	.0951	.1112	.1273	.1434	.1596	.1922
44	.0299	.2525	.4900	.7422	.0090	.5850	89	.0874	.1020	.1168	.1316	.1464	.1761
45	1.9918	2.2046	2.4311	2.6713	2.9251	3.4720	90	1.0806	1.0941	1.1077	1.1212	1.1349	1.1622
46	.9545	.1576	.3736	.6022	.8433	.3622	91	.0749	.0874	.1000	.1126	.1252	.1506
47	.9179	.1117	.3174	.5348	.7638	.2555	92	.0696	.0813	.0929	.1046	.1164	.1399
48	.8821	.0670	.2627	.4692	.6864	.1520	93	.0646	.0754	.0862	.0971	.1079	.1297
49	.8471	.0233	.2094	.4054	.6113	.0518	94	.0599	.0699	.0799	.0900	.1000	.1202
50	1.8130	1.9806	2.1575	2.3435	2.5385	2.9548	95	1.0553	1.0646	1.0739	1.0831	1.0924	1.1110
51	.7796	.9391	.1071	.2834	.4679	.8611	96	.0504	.0589	.0673	.0758	.0842	.1011
52	.7471	.8987	.0581	.2251	.3996	.7706	97	.0461	.0539	.0616	.0693	.0770	.0925
53	.7154	.8595	.0106	.1686	.3335	.6833	98	.0401	.0468	.0535	.0602	.0669	.0804
54	.6845	.8213	1.9645	.1139	.2697	.5993	99	.0300	.0350	.0400	.0450	.0500	.0600

$$\text{FORMULA,} \quad \frac{1000}{A_x} = \frac{D_x}{M_x}.$$

TABLE XXXII.

ANNUITY WHICH 1,000 WILL PURCHASE, PAYABLE AT THE END OF EACH YEAR DURING LIFE.

AGE.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.	AGE.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.
10	42.07	46.29	50.68	55.15	59.70	69.03	55	79.48	82.80	87.28	91.28	95.34	103.6
11	42.30	46.50	50.88	55.33	59.87	69.17	56	81.90	85.17	89.73	93.73	97.79	106.1
12	42.54	46.72	51.09	55.53	60.05	69.33	57	84.50	87.70	92.34	96.35	100.4	108.7
13	42.78	46.96	51.31	55.73	60.25	69.50	58	87.27	90.40	95.14	99.16	103.2	111.5
14	43.04	47.20	51.54	55.95	60.45	69.67	59	90.25	94.17	98.14	102.2	106.3	114.6
15	43.31	47.45	51.78	56.17	60.66	69.86	60	93.44	97.37	101.4	105.4	109.5	117.8
16	43.59	47.72	52.03	56.41	60.88	70.05	61	96.87	100.8	104.8	108.9	113.0	121.3
17	43.89	48.00	52.30	56.66	61.12	70.27	62	100.6	104.5	108.5	112.6	116.7	125.1
18	44.20	48.29	52.58	56.93	61.37	70.49	63	104.5	108.5	112.6	116.7	120.8	129.2
19	44.52	48.60	52.87	57.21	61.64	70.73	64	108.8	112.8	116.9	121.0	125.2	133.6
20	44.86	48.92	53.18	57.51	61.92	70.98	65	113.4	117.4	121.5	125.7	129.9	138.3
21	45.22	49.26	53.51	57.82	62.22	71.25	66	118.4	122.4	126.6	130.7	134.9	143.5
22	45.59	49.62	53.85	58.15	62.53	71.53	67	123.7	127.8	132.0	136.2	140.4	149.0
23	45.98	49.99	54.22	58.49	62.86	71.83	68	129.5	133.7	137.9	142.1	146.4	155.0
24	46.39	50.38	54.60	58.86	63.21	72.16	69	135.8	140.0	144.3	148.5	152.8	161.5
25	46.82	50.80	55.00	59.25	63.59	72.50	70	142.7	146.9	151.2	155.5	159.8	168.6
26	47.27	51.23	55.42	59.65	63.98	72.86	71	150.1	154.4	158.7	163.1	167.5	176.3
27	47.74	51.69	55.87	60.08	64.39	73.25	72	158.2	162.5	166.9	171.3	175.7	184.7
28	48.23	52.16	56.34	60.54	64.83	73.66	73	167.0	171.4	175.8	180.3	184.8	193.8
29	48.76	52.67	56.83	61.02	65.30	74.09	74	176.6	181.1	185.6	190.1	194.6	203.8
30	49.30	53.20	57.35	61.53	65.79	74.55	75	187.2	191.7	196.2	200.8	205.4	214.7
31	49.88	53.76	57.90	62.06	66.31	75.05	76	198.7	203.3	207.9	212.5	217.2	226.6
32	50.48	54.35	58.48	62.63	66.87	75.57	77	211.4	216.0	220.7	225.4	230.2	239.7
33	51.12	54.97	59.10	63.23	67.45	76.13	78	225.3	230.1	234.8	239.6	244.4	254.1
34	51.79	55.62	59.75	63.87	68.08	76.72	79	240.7	245.5	250.4	255.2	260.1	270.0
35	52.50	56.31	60.43	64.54	68.73	77.35	80	257.7	262.6	267.5	272.5	277.5	287.5
36	53.24	57.04	61.15	65.25	69.43	78.02	81	276.6	281.6	286.6	291.7	296.7	307.0
37	54.02	57.81	61.92	66.00	70.17	78.73	82	297.6	302.7	307.9	313.0	318.2	328.6
38	54.85	58.62	62.73	66.80	70.96	79.49	83	321.2	326.4	331.7	336.9	342.2	352.9
39	55.73	59.47	63.58	67.65	71.79	80.30	84	347.8	353.1	358.5	363.9	369.3	380.2
40	56.65	60.38	64.49	68.54	72.67	81.15	85	378.0	383.5	389.1	394.6	400.2	411.3
41	57.62	61.34	65.45	69.49	73.61	82.07	86	413.0	418.6	424.3	430.0	435.7	447.2
42	58.66	62.35	66.47	70.50	74.61	83.04	87	454.3	460.2	466.1	471.9	477.9	489.7
43	59.75	63.42	67.55	71.57	75.67	84.08	88	504.4	510.5	516.6	522.7	528.9	541.2
44	60.90	64.56	68.69	72.71	76.80	85.19	89	568.8	575.3	581.8	588.3	594.8	607.8
45	62.13	65.76	69.91	73.92	78.00	86.37	90	641.1	648.0	654.9	661.8	668.7	682.5
46	63.42	67.04	71.20	75.20	79.27	87 63	91	718.8	726.0	733.3	740.5	747.8	762.3
47	64.80	68.39	72.57	76.56	80.63	88.97	92	810.4	818.0	825.7	833.4	841.1	856.4
48	66.26	69.83	74.02	78.02	82.08	90.40	93	923.6	931.7	939.9	948.1	956.3	972.7
49	67.81	71.35	75.57	79.57	83.63	91.93	94	1064.	1073.	1082.	1091.	1099.	1117.
50	69.46	72.98	77.23	81.22	85.27	93.57	95	1250.	1259.	1269.	1278.	1288.	1307.
51	71.22	74.70	78.99	82.97	87.03	95.31	96	1542.	1553.	1563.	1574.	1585.	1606.
52	73.09	76.54	80.86	84.85	88.90	97.18	97	1945.	1957.	1969.	1981.	1992.	2016.
53	75.08	78.49	82.86	86.85	90.90	99.18	98	3090.	3105.	3120.	3135.	3150.	3180.
54	77.21	80.57	85.00	88.99	93.05	101.3	99	0000.	0000.	0000.	0000.	0000.	0000.

FORMULA, $\dfrac{1000}{a_x} = \dfrac{1000\,D_x}{N_{x+1}}$.

TABLE XXXIII.

COMMUTATION COLUMNS. **3** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	74,409.3	1,842,967.6	38,012,941.3	468.129	20,730.738	735,794.660	10
11	71,774.1	1,768,558.3	36,169,973.7	453.092	20,262.609	715,063.922	11
12	69,230.4	1,696,784.2	34,401,415.4	437.852	19,809.517	694,801.313	12
13	66,776.2	1,627,553.8	32,704,631.2	423.777	19,371.665	674,991.796	13
14	64,407.3	1,560,777.6	31,077,077.4	410.792	18,947.888	655,620.131	14
15	62,120.8	1,496,370.3	29,516,299.8	397.581	18,537.096	636,672.243	15
16	59,913.7	1,434,249.5	28,019,929.5	384.790	18,139.515	618,135.147	16
17	57,784.0	1,374,335.8	26,585,680.0	372.996	17,754.725	599,995.632	17
18	55,727.9	1,316,551.8	25,211,344.2	361.561	17,381.729	582,240.907	18
19	53,743.1	1,260,823.9	23,894,792.4	350.477	17,020.168	564,859.178	19
20	51,827.5	1,207,080.8	22,633,968.5	340.269	16,669.691	547,839.010	20
21	49,977.6	1,155,253.3	21,426,887.7	330.358	16,329.422	531,169.319	21
22	48,191.5	1,105,275.7	20,271,634.4	320.736	15,999.064	514,839.897	22
23	46,467.1	1,057,084.2	19,166,358.7	311.886	15,678.328	498,840.833	23
24	44,801.9	1,010,617.1	18,109,274.5	303.279	15,366.442	483,162.505	24
25	43,193.7	965,815.2	17,098,657.4	294.910	15,063.163	467,796.063	25
26	41,640.7	922,621.5	16,132,842.2	287.671	14,768.253	452,732.900	26
27	40,140.2	880,980.8	15,210,220.7	280.166	14,480.582	437,964.647	27
28	38,690.8	840,840.6	14,329,239.9	273.279	14,200.416	423,484.065	28
29	37,290.7	802,149.8	13,488,399.3	267.380	13,927.137	409,283.649	29
30	35,937.2	764,859.1	12,686,249.5	261.192	13,659.757	395,356.512	30
31	34,629.4	728,921.9	11,921,390.4	255.526	13,398.565	381,696.755	31
32	33,365.1	694,292.5	11,192,468.5	250.345	13,143.039	368,298.190	32
33	32,143.1	660,927.4	10,498,176.0	245.616	12,892.694	355,155.151	33
34	30,961.1	628,784.3	9,837,248.6	241.305	12,647.078	342,262.457	34
35	29,818.2	597,823.2	9,208,464.3	237.727	12,405.773	329,615.379	35
36	28,711.9	568,005.0	8,610,641.1	233.818	12,168.046	317,209.606	36
37	27,641.8	539,293.1	8,042,636.1	230.585	11,934.228	305,041.560	37
38	26,606.1	511,651.3	7,503,343.0	227.974	11,703.643	293,107.332	38
39	25,603.2	485,045.2	6,991,691.7	225.626	11,475.669	281,403.689	39
40	24,631.8	459,442.0	6,506,646.5	223.816	11,250.043	269,928.020	40
41	23,690.6	434,810.2	6,047,204.5	221.921	11,026.227	258,677.977	41
42	22,778.6	411,119.6	5,612,394.3	221.068	10,804.306	247,651.750	42
43	21,894.1	388,341.0	5,201,274.7	220.076	10,583.238	236,847.444	43
44	21,036.4	366,446.9	4,812,933.7	219.749	10,363.162	226,264.206	44
45	20,203.9	345,410.5	4,446,486.8	219.766	10,143.413	215,901.044	45
46	19,395.7	325,206.6	4,101,076.3	220.096	9,923.647	205,757.631	46
47	18,610.6	305,810.9	3,775,869.7	220.945	9,703.551	195,833.984	47
48	17,847.7	287,200.3	3,470,058.8	222.028	9,482.606	186,130.433	48
49	17,105.8	269,352.6	3,182,858.5	223.545	9,260.578	176,647.827	49
50	16,384.1	252,246.8	2,913,505.9	225.449	9,037.033	167,387.249	50
51	15,681.3	235,862.7	2,661,259.1	227.699	8,811.584	158,350.216	51
52	14,997.0	220,181.4	2,425,396.4	230.252	8,583.885	149,538.632	52
53	14,329.9	205,184.4	2,205,215.0	233.071	8,353.633	140,954.747	53
54	13,679.5	190,854.5	2,000,030.6	236.121	8,120.562	132,601.114	54

FORMULAS, $D_x = v^x l_x$; $N_x = D_x + D_{x+1} + \cdots$; $S_x = N_x + N_{x+1} + \cdots$.

TABLE XXXIII.

COMMUTATION COLUMNS.   **3** PER CENT.

AGE.	$D_x.$	$N_x.$	$S_x.$	$C_x.$	$M_x.$	$R_x.$	AGE.
55	13,044.8	177,175.0	1,809,176.1	239.750	7,884.441	124,480.552	55
56	12,425.2	164,130.2	1,632,001.1	243.339	7,644.691	116,596.111	56
57	11,820.0	151,705.0	1,467,870.9	247.416	7,401.352	108,951.420	57
58	11,228.3	139,885.0	1,316,165.9	251.398	7,153.936	101,550.068	58
59	10,649.8	128,656.7	1,176,280.9	255.448	6,902.538	94,396.132	59
60	10,084.2	118,006.89	1,047,624.22	259.708	6,647.090	87,493.594	60
61	9,530.75	107,922.69	929,617.33	263.983	6,387.382	80,846.504	61
62	8,989.18	98,391.94	821,694.64	267.944	6,123.399	74,459.122	62
63	8,459.43	89,402.76	723,302.70	271.903	5,855.455	68,335.723	63
64	7,941.12	80,943.33	633,899.94	275.550	5,583.552	62,480.268	64
65	7,434.26	73,002.21	552,956.61	278.896	5,308.002	56,896.716	65
66	6,938.84	65,567.95	479,954.40	281.537	5,029.106	51,588.714	66
67	6,455.22	58,629.11	414,386.45	283.789	4,747.569	46,559.608	67
68	5,983.40	52,173.89	355,757.34	284.889	4,463.780	41,812.039	68
69	5,524.25	46,190.49	303,583.45	285.558	4,178.891	37,348.259	69
70	5,077.78	40,666.24	257,392.96	284.844	3,893.333	33,169.368	70
71	4,645.05	35,588.46	216,726.72	283.095	3,608.489	29,276.035	71
72	4,226.65	30,943.41	181,138.26	279.935	3,325.394	25,667.546	72
73	3,823.61	26,716.76	150,194.85	275.260	3,045.459	22,342.152	73
74	3,436.99	22,893.15	123,478.09	269.313	2,770.199	19,296.693	74
75	3,067.56	19,456.16	100,584.94	261.468	2,500.886	16,526.494	75
76	2,716.76	16,388.60	81,128.78	251.902	2,239.418	14,025.608	76
77	2,385.73	13,671.84	64,740.18	240.876	1,987.516	11,786.190	77
78	2,075.36	11,286.11	51,068.34	228.052	1,746.640	9,798.674	78
79	1,786.86	9,210.75	39,782.23	213.704	1,518.588	8,052.034	79
80	1,521.12	7,423.887	30,571.484	197.991	1,304.884	6,533.446	80
81	1,278.82	5,902.767	23,147.597	181.063	1,106.893	5,228.562	81
82	1,060.51	4,623.947	17,244.830	163.404	925.830	4,121.669	82
83	866.216	3,563.437	12,620.883	145.035	762.426	3,195.839	83
84	695.951	2,697.221	9,057.446	126.705	617.391	2,433.413	84
85	548.976	2,001.270	6,360.225	108.533	490.686	1,816.022	85
86	424.452	1,452.294	4,358.955	91.0068	382.153	1,325.336	86
87	321.083	1,027.842	2,906.661	74.7799	291.1461	943.1827	87
88	236.951	706.759	1,878.819	59.7092	216.3662	652.0366	88
89	170.341	469.808	1,172.060	48.3900	156.6570	435.6704	89
90	116.9892	299.4671	702.2519	37.2722	108.2670	279.0134	90
91	76.3096	182.4779	402.7850	26.5633	70.9948	170.7464	91
92	47.5237	106.1683	220.3071	17.9823	44.4315	99.7516	92
93	28.1573	58.6446	114.1388	11.6183	26.4492	55.3201	93
94	15.7189	30.4873	55.4942	7.05748	14.83089	28.87092	94
95	8.20357	14.76840	25.00690	3.98231	7.77341	14.04003	95
96	3.98231	6.56483	10.23852	2.16059	3.79110	6.26662	96
97	1.70573	2.58252	3.67369	.993631	1.630512	2.475523	97
98	.662419	.876794	1.091169	.428751	.636881	.845011	98
99	.214375	.214375	.214375	.208130	.208130	.208130	99

$$C_x = (l_x - l_{x+1})v^{x+1}; \quad M_x = C_x + C_{x+1} + \cdots; \quad R_x = M_x + M_{x+1} + \cdots$$

TABLE XXXIII.

LOGARITHMS OF COMMUTATION COLUMNS.   **3** PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
10	4.871627	6.265518	7.579931	2.670366	4.316615	5.866757	10
11	4.855968	6.247619	7.558349	2.656186	4.306695	5.854345	11
12	4.840297	6.229627	7.536576	2.641327	4.296874	5.841861	12
13	4.824622	6.211535	7.514609	2.627137	4.287167	5.829298	13
14	4.808935	6.193341	7.492440	2.613622	4.277561	5.816652	14
15	4.793237	6.175039	7.470062	2.599425	4.268042	5.803916	15
16	4.777526	6.156625	7.447467	2.585224	4.258626	5.791084	16
17	4.761808	6.138093	7.424648	2.571704	4.249314	5.778148	17
18	4.746073	6.119438	7.401596	2.558182	4.240093	5.765103	18
19	4.730323	6.100654	7.378303	2.544659	4.230964	5.751940	19
20	4.714559	6.081736	7.354760	2.531822	4.221928	5.738653	20
21	4.698776	6.062677	7.330959	2.518985	4.212971	5.725233	21
22	4.682971	6.043471	7.306889	2.506148	4.204094	5.711672	22
23	4.667146	6.024110	7.282539	2.493996	4.195300	5.697962	23
24	4.651296	6.004587	7.257901	2.481843	4.186573	5.684093	24
25	4.635421	5.984894	7.232962	2.469689	4.177916	5.670056	25
26	4.619518	5.965024	7.207711	2.458896	4.169328	5.655842	26
27	4.603580	5.944966	7.182135	2.447416	4.160787	5.641439	27
28	4.587608	5.924714	7.156223	2.436606	4.152301	5.626837	28
29	4.571601	5.904255	7.129961	2.427128	4.143862	5.612025	29
30	4.555544	5.883581	7.103334	2.416959	4.135443	5.596989	30
31	4.539445	5.862681	7.076327	2.407435	4.127059	5.581718	31
32	4.523292	5.841542	7.048926	2.398540	4.118696	5.566200	32
33	4.507087	5.820154	7.021114	2.390257	4.110344	5.550418	33
34	4.490817	5.798501	6.992874	2.382567	4.101990	5.534359	34
35	4.474481	5.776573	6.964187	2.376079	4.093625	5.518008	35
36	4.458061	5.754352	6.935035	2.368878	4.085221	5.501346	36
37	4.441565	5.731825	6.905398	2.362832	4.076795	5.484359	37
38	4.424981	5.708974	6.875255	2.357885	4.068321	5.467027	38
39	4.408294	5.685783	6.844582	2.353389	4.059779	5.449330	39
40	4.391497	5.662231	6.813357	2.349892	4.051154	5.431248	40
41	4.374575	5.638300	6.781554	2.346198	4.042427	5.412760	41
42	4.357528	5.613969	6.749148	2.344526	4.033597	5.393841	42
48	4.340328	5.589213	6.716110	2.342574	4.024618	5.374468	43
44	4.322971	5.564011	6.682410	2.341926	4.015492	5.354616	44
45	4.305434	5.538336	6.648017	2.341962	4.006183	5.334255	45
46	4.287706	5.512159	6.612898	2.342611	3.996672	5.313356	46
47	4.269761	5.485453	6.577017	2.344284	3.986931	5.291888	47
48	4.251582	5.458185	6.540337	2.346408	3.976928	5.269817	48
49	4.233143	5.430321	6.502816	2.349365	3.966638	5.247109	49
50	4.214422	5.401826	6.464416	2.353049	3.956026	5.223723	50
51	4.195383	5.372659	6.425086	2.357360	3.945054	5.199619	51
52	4.176002	5.342781	6.384782	2.362203	3.933684	5.174753	52
53	4.156242	5.312144	6.343450	2.367488	3.921875	5.149080	53
54	4.136069	5.280702	6.301037	2.373134	3.909586	5.122548	54

TABLE XXXIII.

LOGARITHMS OF COMMUTATION COLUMNS. **3** PER CENT.

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x.	AGE.
55	4.115439	5.248403	6.257481	2.379759	3.896771	5.095102	55
56	4.094302	5.215188	6.212720	2.386212	3.883360	5.066684	56
57	4.072616	5.181000	6.166688	2.393428	3.869311	5.037233	57
58	4.050312	5.145771	6.119311	2.400363	3.854545	5.006680	58
59	4.027342	5.109432	6.070511	2.407303	3.839009	4.974955	59
60	4.003641	5.071906	6.020205	2.414486	3.822632	4.941976	60
61	3.979127	5.033113	5.968304	2.421576	3.805323	4.907662	61
62	3.953720	4.992959	5.914710	2.428044	3.786993	4.871918	62
63	3.927341	4.951351	5.859320	2.434413	3.767561	4.834648	63
64	3.899882	4.908181	5.802021	2.440200	3.746910	4.795743	64
65	3.871238	4.863336	5.742691	2.445442	3.724931	4.755087	65
66	3.841287	4.816692	5.681200	2.449536	3.701491	4.712555	66
67	3.809911	4.768113	5.617405	2.452995	3.676471	4.668009	67
68	3.776948	4.717453	5.551154	2.454676	3.649703	4.621301	68
69	3.742273	4.664552	5.482278	2.455695	3.621061	4.572270	69
70	3.705674	4.609234	5.410597	2.454606	3.590321	4.520737	70
71	3.666990	4.551309	5.335912	2.451932	3.557326	4.466513	71
72	3.625996	4.490568	5.258010	2.447057	3.521843	4.409384	72
73	3.582474	4.426784	5.176655	2.439743	3.483653	4.349125	73
74	3.536178	4.359706	5.091590	2.430257	3.442511	4.285483	74
75	3.486794	4.289057	5.002533	2.417419	3.398094	4.218181	75
76	3.434051	4.214542	4.909175	2.401231	3.350135	4.146922	76
77	3.377621	4.135827	4.811174	2.381793	3.298311	4.071373	77
78	3.317094	4.052544	4.708152	2.358035	3.242203	3.991167	78
79	3.252091	3.964295	4.599690	2.329813	3.181440	3.905906	79
80	3.182162	3.870631	4.485317	2.296645	3.115572	3.815142	80
81	3.106809	3.771056	4.364506	2.257828	3.044105	3.718382	81
82	3.025515	3.665013	4.236659	2.213264	2.966531	3.615073	82
83	2.937626	3.551869	4.101090	2.161473	2.882198	3.504585	83
84	2.842579	3.430916	3.957006	2.102795	2.790560	3.386216	84
85	2.739553	3.301306	3.803473	2.035563	2.690804	3.259121	85
86	2.627829	3.162055	3.639382	1.959073	2.582237	3.122326	86
87	2.506618	3.011926	3.463394	1.873785	2.464111	2.974596	87
88	2.374659	2.849271	3.273885	1.776042	2.335189	2.814272	88
89	2.231318	2.671920	3.068950	1.684756	2.194950	2.639158	89
90	2.068146	2.476349	2.846493	1.571385	2.034496	2.445625	90
91	1.882579	2.261210	2.605074	1.424280	1.851228	2.232352	91
92	1.676910	2.025995	2.343028	1.254844	1.647691	1.998920	92
93	1.449591	1.768228	2.057433	1.065143	1.422413	1.742883	93
94	1.196422	1.484119	1.744248	0.848650	1.171168	1.460461	94
95	0.914003	1.169334	1.398060	0.600135	0.890611	1.147368	95
96	0.600135	0.817223	1.010237	0.334573	0.578765	0.797033	96
97	0.231910	0.412043	0.565103	$\bar{1}$.997225	0.212324	0.393667	97
98	$\bar{1}$.821133	$\bar{1}$.942898	0.037892	$\bar{1}$.632205	$\bar{1}$.804059	$\bar{1}$.926863	98
99	$\bar{1}$.331175	$\bar{1}$.331175	$\bar{1}$.331175	$\bar{1}$.318338	$\bar{1}$.318338	$\bar{1}$.318338	99

TABLE XXXIV.

COMMUTATION COLUMNS. $3\frac{1}{2}$ PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	70,892.0	1,602,284.9	31,098,393.9	443.845	16,735.405	551,200.709	10
11	68,050.8	1,531,392.9	29,496,109.0	427.512	16,291.560	534,465.304	11
12	65,322.1	1,463,342.1	27,964,716.1	411.138	15,864.048	518,173.744	12
13	62,701.9	1,398,020.0	26,501,374.0	395.998	15,452.910	502,309.696	13
14	60,185.5	1,335,318.1	25,103,354.0	382.010	15,056.912	486,856.786	14
15	57,768.4	1,275,132.6	23,768,035.9	367.938	14,674.902	471,799.874	15
16	55,446.7	1,217,364.2	22,492,903.3	354.382	14,306.964	457,124.972	16
17	53,217.4	1,161,917.5	21,275,539.1	341.859	13,952.582	442,818.008	17
18	51,076.0	1,108,700.1	20,113,621.6	329.779	13,610.723	428,865.426	18
19	49,019.0	1,057,624.1	19,004,921.5	318.124	13,280.944	415,254.703	19
20	47,043.2	1,008,605.1	17,947,297.4	307.366	12,962.820	401,973.759	20
21	45,145.0	961,561.9	16,938,692.3	296.972	12,655.454	389,010.939	21
22	43,321.3	916,416.9	15,977,130.4	286.930	12,358.482	376,355.485	22
23	41,569.4	873,095.6	15,060,713.5	277.665	12,071.552	363,997.003	23
24	39,886.1	831,526.2	14,187,617.9	268.698	11,793.887	351,925.451	24
25	38,268.6	791,640.1	13,356,091.7	260.021	11,525.189	340,131.564	25
26	36,714.5	753,371.5	12,564,451.6	252.413	11,265.168	328,606.375	26
27	35,220.5	716,657.0	11,811,080.1	244.640	11,012.755	317,341.207	27
28	33,784.8	681,436.5	11,094,423.1	237.474	10,768.115	306,328.452	28
29	32,404.8	647,651.7	10,412,986.6	231.225	10,530.641	295,560.337	29
30	31,077.8	615,246.9	9,765,334.9	224.782	10,299.416	285,029.696	30
31	29,802.1	584,169.1	9,150,088.0	218.844	10,074.634	274,730.280	31
32	28,575.4	554,367.0	8,565,918.9	213.372	9,855.790	264,655.646	32
33	27,395.8	525,791.6	8,011,551.9	208.330	9,642.418	254,799.856	33
34	26,261.0	498,395.8	7,485,760.3	203.684	9,434.088	245,157.438	34
35	25,169.3	472,134.8	6,987,364.5	199.695	9,230.404	235,723.350	35
36	24,118.4	446,965.5	6,515,229.7	195.462	9,030.709	226,492.946	36
37	23,107.3	422,847.1	6,068,264.2	191.828	8,835.247	217,462.237	37
38	22,134.2	399,739.8	5,645,417.1	188.740	8,643.419	208,626.990	38
39	21,196.9	377,605.6	5,245,677.3	185.893	8,454.679	199,983.571	39
40	20,294.2	356,408.7	4,868,071.7	183.512	8,268.786	191,528.892	40
41	19,424.4	336,114.5	4,511,663.0	181.078	8,085.274	183,260.106	41
42	18,586.5	316,690.1	4,175,548.5	179.511	7,904.196	175,174.832	42
43	17,778.4	298,103.6	3,858,858.4	177.843	7,724.685	167,270.636	43
44	16,999.4	280,325.2	3,560,754.8	176.720	7,546.842	159,545.951	44
45	16,247.8	263,325.8	3,280,429.6	175.881	7,370.122	151,999.109	45
46	15,522.5	247,078.0	3,017,103.8	175.293	7,194.241	144,628.987	46
47	14,822.3	231,555.5	2,770,025.8	175.119	7,018.948	137,434.746	47
48	14,145.9	216,733.2	2,538,470.3	175.128	6,843.829	130,415.798	48
49	13,492.4	202,587.3	2,321,737.1	175.473	6,668.701	123,571.969	49
50	12,860.7	189,094.9	2,119,149.8	176.112	6,493.228	116,903.268	50
51	12,249.7	176,234.2	1,930,054.9	177.010	6,317.116	110,410.040	51
52	11,658.4	163,984.5	1,753,820.7	178.130	6,140.106	104,092.924	52
53	11,086.1	152,326.1	1,589,836.2	179.440	5,961.976	97,952.818	53
54	10,531.7	141,240.0	1,437,510.1	180.910	5,782.536	91,990.842	54

TABLE XXXIV.

COMMUTATION COLUMNS. $3\frac{1}{2}$ PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x	M_x.	R_x.	AGE.
55	9,994.66	130,708.28	1,296,270.07	182.803	5,601.626	86,208.306	55
56	9,473.86	120,713.62	1,165,561.79	184.644	5,418,823	80,606.680	56
57	8,968.85	111,239.76	1,044,848.17	186.830	5,234.179	75,187.857	57
58	8,478.73	102,270.91	933,608.41	188.920	5,047.349	69,953.678	58
59	8,803.10	93,792.18	831,337.50	191.036	4,858.429	64,906.329	59
60	7,541.42	84,989.08	737,545.32	193.284	4,667.393	60,047.900	60
61	7,093.12	77,447.66	652,556.24	195.516	4,474.109	55,380.507	61
62	6,657.73	70,354.54	575,108.58	197.491	4,278.593	50,906.398	62
63	6,235.11	63,696.81	504,754.04	199.440	4,081.102	46,627.805	63
64	5,824.80	57,461.70	441,057.23	201.139	3,881.662	42,546.703	64
65	5,426.69	51,636.90	383,595.53	202.598	3,680.523	38,665.041	65
66	5,040.59	46,210.21	331,958.63	203.529	3,477.925	34,984.518	66
67	4,666.62	41,169.62	285,748.42	204.165	3,274.396	31,506.593	67
68	4,304.63	36,503.00	244,578.80	203.967	3,070.231	28,232.197	68
69	3,955.10	32,198.37	208,075.80	203.459	2,866.264	25,161.966	69
70	3,617.90	28,243.27	175,877.43	201.969	2,662.805	22,295.702	70
71	3,293.58	24,625.37	147,634.16	199.759	2,460.836	19,632.897	71
72	2,982.44	21,331.79	123,008.79	196.575	2,261.077	17,172.061	72
73	2,685.02	18,349.35	101,677.00	192.359	2,064.502	14,910.984	73
74	2,401.86	15,664.33	83,327.65	187.293	1,872.143	12,846.482	74
75	2,133.34	13,262.47	67,663.32	180.960	1,684.850	10,974.339	75
76	1,880.24	11,129.13	54,400.85	173.496	1,503.890	9,289.489	76
77	1,643.16	9,248.89	43,271.72	165.101	1,330.394	7,785.599	77
78	1,422.49	7,605.73	34,022.83	155.556	1,165.293	6,455.205	78
79	1,218.832	6,183.245	26,417.108	145.065	1,009.737	5,289.912	79
80	1,032.552	4,964.413	20,233.863	133.749	864.672	4,280.175	80
81	863.885	3,931.861	15,269.450	121.723	730.923	3,415.503	81
82	712.948	3,067.976	11,337.589	109.321	609.200	2,684.580	82
83	579.518	2,355.028	8,269.613	96.5629	499.8792	2,075.3797	83
84	463.358	1,775.510	5,914.585	83.9517	403.3163	1,575.5005	84
85	363.737	1,312.152	4,139.075	71.5639	319.3646	1,172.1842	85
86	279.872	948.415	2,826.923	59.7175	247.8007	852.8196	86
87	210.691	668.543	1,878.508	48.8326	188.0832	605.0189	87
88	154.733	457.852	1,209.965	38.8028	139.2506	416.9357	88
89	110.698	303.119	752.113	31.2950	100.4478	277.6851	89
90	75.6598	192.4206	448.9945	23.9884	69.1528	177.2373	90
91	49.1127	116.7608	256.5739	17.0135	45.1644	108.0845	91
92	30.4385	67.6481	139.8131	11.4618	28.1509	62.9201	92
93	17.9474	37.2096	72.1650	7.36969	16.68907	34.76921	93
94	9.97075	19.26219	34.95535	4.45506	9.31938	18.08014	94
95	5.17852	9.29144	15.69316	2.50170	4.86432	8.76076	95
96	2.50170	4.11292	6.40172	1.35074	2.36262	3.89644	96
97	1.06637	1.61122	2.28880	.618184	1.011883	1.533823	97
98	.412123	.544852	.677581	.265458	.393699	.521940	98
99	.132729	.132729	.132729	.128241	.128241	.128241	99

TABLE XXXIV.

LOGARITHMS OF COMMUTATION COLUMNS. $3\frac{1}{2}$ PER CENT.

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x.	AGE.
10	4.850597	6.204740	7.492738	2.647231	4.223636	5.741310	10
11	4.832833	6.185087	7.469765	2.630948	4.211963	5.727919	11
12	4.815060	6.165346	7.446610	2.613987	4.200414	5.714475	12
13	4.797281	6.145513	7.423268	2.597693	4.189010	5.700972	13
14	4.779492	6.125585	7.399732	2.582075	4.177736	5.687401	14
15	4.761690	6.105555	7.375993	2.565775	4.166575	5.673758	15
16	4.743876	6.085420	7.352046	2.549471	4.155547	5.660035	16
17	4.726054	6.065175	7.327881	2.533847	4.144655	5.646225	17
18	4.708217	6.044814	7.303490	2.518223	4.133881	5.632321	18
19	4.690364	6.024331	7.278866	2.502597	4.123229	5.618315	19
20	4.672497	6.003721	7.253999	2.487656	4.112700	5.604198	20
21	4.654610	5.982977	7.228880	2.472716	4.102278	5.589962	21
22	4.636702	5.962093	7.203499	2.457776	4.091966	5.575598	22
23	4.618774	5.941062	7.177845	2.443521	4.081763	5.561097	23
24	4.600822	5.919876	7.151909	2.429265	4.071658	5.546451	24
25	4.582842	5.898528	7.125679	2.415008	4.061648	5.531647	25
26	4.564837	5.877009	7.099143	2.402111	4.051738	5.516676	26
27	4.546796	5.855311	7.072290	2.388528	4.041896	5.501527	27
28	4.528721	5.833426	7.045105	2.375616	4.032140	5.486188	28
29	4.510609	5.811341	7.017575	2.364034	4.022454	5.470646	29
30	4.492450	5.789050	6.989687	2.351762	4.012812	5.454891	30
31	4.474247	5.766538	6.961425	2.340135	4.003229	5.438906	31
32	4.455993	5.743798	6.932774	2.329137	3.993692	5.422681	32
33	4.437684	5.720813	6.903717	2.318750	3.984186	5.406199	33
34	4.419311	5.697574	6.874236	2.308958	3.974700	5.389445	34
35	4.400871	5.674066	6.844313	2.300367	3.965221	5.372402	35
36	4.382349	5.650274	6.813930	2.291063	3.955722	5.355055	36
37	4.363750	5.626183	6.783065	2.282913	3.946219	5.337383	37
38	4.345063	5.601778	6.751696	2.275864	3.936686	5.319371	38
39	4.326272	5.577038	6.719802	2.269264	3.927097	5.300994	39
40	4.307372	5.551948	6.687357	2.263664	3.917442	5.282234	40
41	4.288348	5.526487	6.654337	2.257866	3.907695	5.263068	41
42	4.269197	5.500634	6.620714	2.254091	3.897858	5.243472	42
43	4.249893	5.474367	6.586459	2.250036	3.887881	5.223420	43
44	4.230434	5.447662	6.551542	2.247285	3.877765	5.202886	44
45	4.210794	5.420493	6.515931	2.245218	3.867475	5.181841	45
46	4.190961	5.392834	6.479590	2.243764	3.856985	5.160255	46
47	4.170915	5.364655	6.442484	2.243334	3.846272	5.138097	47
48	4.150631	5.335925	6.404572	2.243355	3.835299	5.115330	48
49	4.130090	5.306612	6.365813	2.244209	3.824041	5.091920	49
50	4.109265	5.276680	6.326162	2.245790	3.812461	5.067827	50
51	4.088124	5.246090	6.285570	2.247998	3.800519	5.043008	51
52	4.066640	5.214803	6.243985	2.250737	3.788176	5.017421	52
53	4.044777	5.182774	6.201352	2.253919	3.775391	4.991017	53
54	4.022499	5.149958	6.157608	2.257462	3.762119	4.963744	54

TABLE XXXIV.

LOGARITHMS OF COMMUTATION COLUMNS. $3\frac{1}{2}$ PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	λS_x	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
55	3.999768	5.116303	6.112696	2.261984	3.748314	4.935550	55
56	3.976527	5.081756	6.066535	2.266334	3.733905	4.906371	56
57	3.952737	5.046260	6.019053	2.271446	3.718849	4.876148	57
58	3.928331	5.009752	5.970165	2.276278	3.703063	4.844811	58
59	3.903258	4.972167	5.919777	2.281116	3.686496	4.812287	59
60	3.877453	4.929363	5.867789	2.286195	3.669074	4.778498	60
61	3.850837	4.889008	5.814618	2.291182	3.650707	4.743357	61
62	3.823326	4.847292	5.759750	2.295547	3.631301	4.706773	62
63	3.794844	4.804118	5.703080	2.299813	3.610777	4.668645	63
64	3.765281	4.759379	5.644495	2.303497	3.589018	4.628866	64
65	3.734535	4.712960	5.583873	2.306636	3.565909	4.587318	65
66	3.702481	4.664738	5.521084	2.308627	3.541321	4.543876	66
67	3.669002	4.614577	5.455984	2.309982	3.515132	4.498401	67
68	3.633936	4.562329	5.388419	2.309560	3.487171	4.450745	68
69	3.597157	4.507834	5.318222	2.308476	3.457316	4.400744	69
70	3.558456	4.450915	5.245210	2.305284	3.425340	4.348221	70
71	3.517668	4.391383	5.169187	2.300507	3.391083	4.292985	71
72	3.474572	4.329027	5.089936	2.293529	3.354316	4.234823	72
73	3.428947	4.263620	5.007223	2.284112	3.314815	4.173506	73
74	3.380547	4.194912	4.920789	2.272522	3.272338	4.108784	74
75	3.329060	4.122625	4.830353	2.257582	3.226561	4.040379	75
76	3.274213	4.046461	4.735606	2.239291	3.177216	3.967992	76
77	3.215680	3.966090	4.636204	2.217750	3.123979	3.891292	77
78	3.153050	3.881141	4.531770	2.191888	3.066434	3.809910	78
79	3.085944	3.791216	4.421885	2.161563	3.004208	3.723448	79
80	3.013912	3.695868	4.306079	2.126291	2.936850	3.631462	80
81	2.936456	3.594598	4.183823	2.085372	2.863872	3.533454	81
82	2.853058	3.486852	4.054521	2.038705	2.784760	3.428877	82
83	2.763067	3.371996	3.917485	1.984810	2.698865	3.317098	83
84	2.665917	3.249323	3.771924	1.924029	2.605646	3.197418	84
85	2.560787	3.117984	3.616903	1.854694	2.504287	3.068996	85
86	2.446960	2.976999	3.451314	1.776101	2.394103	2.930857	86
87	2.323646	2.825129	3.273813	1.688710	2.274350	2.781769	87
88	2.189584	2.660725	3.082773	1.588863	2.143798	2.620069	88
89	2.044140	2.481613	2.876283	1.495475	2.001940	2.443553	89
90	1.878865	2.284251	2.652241	1.380000	1.839811	2.248555	90
91	1.691194	2.067297	2.409213	1.230793	1.654796	2.033763	91
92	1.483423	1.830256	2.145548	1.059254	1.449492	1.798790	92
93	1.254001	1.570655	1.858327	0.867449	1.222433	1.541195	93
94	0.998728	1.284706	1.543513	0.648853	0.969388	1.257201	94
95	0.714206	0.968083	1.195710	0.398235	0.687022	0.942542	95
96	0.398235	0.614150	0.806297	$\overline{0}.130570$	0.373394	0.590668	96
97	$\overline{0}.027907$	0.207154	0.359608	$\overline{1}.791118$	$\overline{0}.005129$	0.185775	97
98	$\overline{1}.615027$	$\overline{1}.736279$	$\overline{1}.830961$	$\overline{1}.423995$	$\overline{1}.595164$	$\overline{1}.717621$	98
99	$\overline{1}.122965$	$\overline{1}.122965$	$\overline{1}.122965$	$\overline{1}.108025$	$\overline{1}.108025$	$\overline{1}.108025$	99

TABLE XXXV.

COMMUTATION COLUMNS.   **4** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	67,556.5	1,400,554.9	25,570,207.5	420.929	13,688.944	417,085.094	10
11	64,537.2	1,332,998.4	24,169,652.6	403.490	13,268.015	403,396.150	11
12	61,651.5	1,268,461.2	22,836,654.2	386.169	12,864.525	390,128.135	12
13	58,894.1	1,206,809.7	21,568,193.0	370.161	12,478.356	377,263.610	13
14	56,258.7	1,147,915.6	20,361,383.3	355.369	12,108.195	364,785.254	14
15	53,739.7	1,091,656.9	19,213,467.7	340.634	11,752.826	352,677.059	15
16	51,332.1	1,037,917.2	18,121,810.8	326.505	11,412.192	340,924.233	16
17	49,031.3	986,585.1	17,083,893.6	313.454	11,085.687	329,512.041	17
18	46,832.0	937,553.8	16,097,308.5	300.923	10,772.233	318,426.354	18
19	44,729.9	890,721.8	15,159,754.6	288.893	10,471.310	307,654.121	19
20	42,720.6	845,991.9	14,269,032.8	277.782	10,182.417	297,182.811	20
21	40,799.7	803,271.3	13,423,040.9	267.098	9,904.635	287,000.394	21
22	38,963.4	762,471.6	12,619,769.6	256.825	9,637.537	277,095.759	22
23	37,207.9	723,508.2	11,857,298.0	247.337	9,380.712	267,458.222	23
24	35,529.6	686,300.3	11,133,789.8	238.199	9,133.375	258,077.510	24
25	33,924.9	650,770.7	10,447,489.5	229.398	8,895.176	248,944.135	25
26	32,390.6	616,845.8	9,796,718.8	221.616	8,665.778	240,048.959	26
27	30,923.2	584,455.2	9,179,873.0	213.759	8,444.162	231,383.181	27
28	29,520.1	553,532.0	8,595,417.8	206.499	8,230.403	222,939.019	28
29	28,178.2	524,011.9	8,041,885.8	200.099	8,023.904	214,708.616	29
30	26,894.3	495,833.7	7,517,873.9	193.589	7,823.805	206,684.712	30
31	25,666.4	468,939.4	7,022,040.2	187.568	7,630.216	198,860.907	31
32	24,491.6	443,273.0	6,553,100.8	181.999	7,442.648	191,230.691	32
33	23,367.6	418,781.4	6,109,827.8	176.843	7,260.649	183,788.043	33
34	22,292.1	395,413.8	5,691,046.4	172.069	7,083.806	176,527.394	34
35	21,262.6	373,121.7	5,295,632.6	167.888	6,911.737	169,443.588	35
36	20,276.9	351,859.1	4,922,510.9	163.539	6,743.849	162,531.851	36
37	19,333.4	331,582.2	4,570,651.8	159.727	6,580.310	155,788.002	37
38	18,430.2	312,248.8	4,239,069.6	156.400	6,420.583	149,207.692	38
39	17,564.9	293,818.6	3,926,820.8	153.301	6,264.183	142,787.109	39
40	16,736.0	276,253.7	3,633,002.2	150.609	6,110.882	136,522.926	40
41	15,941.7	259,517.7	3,356,748.5	147.898	5,960.273	130,412.044	41
42	15,180.7	243,576.0	3,097,230.8	145.913	5,812.375	124,451.771	42
43	14,450.9	228,395.3	2,853,654.8	143.862	5,666.462	118,639.396	43
44	13,751.2	213,944.4	2,625,259.5	142.266	5,522.600	112,972.934	44
45	13,080.1	200,193.2	2,411,315.1	140.909	5,380.334	107,450.334	45
46	12,436.1	187,113.1	2,211,121.9	139.764	5,239.425	102,070.000	46
47	11,818.0	174,677.0	2,024,008.8	138.954	5,099.661	96,830.575	47
48	11,224.5	162,859.0	1,849,331.8	138.292	4,960.707	91,730.914	48
49	10,654.5	151,634.5	1,686,472.8	137.898	4,822.415	86,770.207	49
50	10,106.8	140,979.99	1,534,838.27	137.736	4,684.517	81,947.792	50
51	9,580.36	130,873.19	1,393,858.28	137.773	4,546.781	77,263.275	51
52	9,074.11	121,292.83	1,262,985.09	137.978	4,409.008	72,716.494	52
53	8,587.13	112,218.72	1,141,692.26	138.324	4,271.030	68,307.486	53
54	8,118.54	103,631.59	1,029,473.54	138.787	4,132.706	64,036.456	54

TABLE XXXV.

COMMUTATION COLUMNS.   **4** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	7,667.49	95,513.05	925,841.95	139.565	3,993.919	59,903.750	55
56	7,233.03	87,845.56	830,328.90	140.292	3,854.354	55,909.831	56
57	6,814.55	80,612.53	742,483.34	141.271	3,714.062	52,055.477	57
58	6,411.17	73,797.98	661,870.81	142.165	3,572.791	48,341.415	58
59	6,022.43	67,386.81	588,072.83	143.066	3,430.626	44,768.624	59
60	5,647.73	61,364.38	520,686.02	144.053	3,287.560	41,337.998	60
61	5,286.45	55,716.65	459,321.64	145.016	3,143.507	38,050.438	61
62	4,938.11	50,430.20	403,604.99	145.777	2,998.491	34,906.931	62
63	4,602.42	45,492.09	353,174.79	146.508	2,852.714	31,908.440	63
64	4,278.88	40,889.67	307,682.70	147.046	2,706.206	29,055.726	64
65	3,967.26	36,610.79	266,793.03	147.400	2,559.160	26,349.520	65
66	3,667.28	32,643.53	230,182.24	147.366	2,411.760	23,790.360	66
67	3,378.87	28,976.25	197,538.71	147.116	2,264.394	21,378.600	67
68	3,101.79	25,597.38	168,562.46	146.266	2,117.278	19,114.206	68
69	2,836.23	22,495.59	142,965.08	145.200	1,971.012	16,996.928	69
70	2,581.94	19,659.36	120,469.49	143.444	1,825.812	15,025.916	70
71	2,339.19	17,077.42	100,810.13	141.193	1,682.368	13,200.104	71
72	2,108.03	14,738.23	83,732.71	138.274	1,541.175	11,517.736	72
73	1,888.68	12,630.20	68,994.48	134.657	1,402.901	9,976.561	73
74	1,681.38	10,741.52	56,364.28	130.481	1,268.244	8,573.660	74
75	1,486.23	9,060.14	45,622.76	125.463	1,137.763	7,305.416	75
76	1,303.60	7,573.91	36,562.62	119.710	1,012.300	6,167.653	76
77	1,133.76	6,270.31	28,988.71	113.369	892.590	5,155.353	77
78	976.78	5,136.55	22,718.40	106.302	779.221	4,262.763	78
79	832.910	4,159.77	17,581.85	98.6560	672.9185	3,483.5424	79
80	702.220	3,326.861	13,422.083	90.5231	574.2625	2,810.6239	80
81	584.688	2,624.641	10,095.222	81.9874	483.7394	2,236.3614	81
82	480.212	2,039.953	7,470.581	73.2802	401.7520	1,752.6220	82
83	388.462	1,559.741	5,430.628	64.4168	328.4718	1,350.8700	83
84	309.105	1,171.279	3,870.887	55.7346	264.0550	1,022.3982	84
85	241.481	862.174	2,690.608	47.2821	208.3204	758.3432	85
86	184.911	620.693	1,837.434	39.2655	161.0383	550.0228	86
87	138.534	435.782	1,216.741	31.9541	121.7728	388.9845	87
88	101.251	297.248	780.959	25.2689	89.8187	267.2117	88
89	72.088	195.997	483.711	20.2818	64.5498	177.3930	89
90	49.0339	123.9092	287.7138	15.4717	44.2680	112.8432	90
91	31.6761	74.8754	163.8046	10.9204	28.7963	68.5752	91
92	19.5375	43.1993	88.9292	7.32159	17.87594	39.77885	92
93	11.4644	23.6618	45.7299	4.68498	10.55435	21.90291	93
94	6.3385	12.1974	22.0681	2.81850	5.86937	11.34856	94
95	3.27621	5.85884	9.87072	1.57510	3.05087	5.47919	95
96	1.57510	2.58263	4.01188	.846350	1.475769	2.428324	96
97	.668170	1.00753	1.42925	.385483	.629419	.952555	97
98	.256988	.339356	.421724	.164736	.243936	.323136	98
99	.082368	.082368	.082368	.079200	.079200	.079200	99

TABLE XXXV.

LOGARITHMS OF COMMUTATION COLUMNS.   **4** PER CENT.

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x	AGE.
10	4.829667	6.146300	7.407734	2.624208	4.136370	5.620225	10
11	4.809810	6.124829	7.383270	2.605832	4.122806	5.605732	11
12	4.789944	6.103277	7.358632	2.586777	4.109394	5.591207	12
13	4.770072	6.081639	7.333814	2.568391	4.096158	5.576645	13
14	4.750190	6.059910	7.308807	2.550679	4.083080	5.562037	14
15	4.730295	6.038086	7.283606	2.532287	4.070142	5.547377	15
16	4.710389	6.016162	7.258202	2.513890	4.057369	5.532658	16
17	4.690473	5.994135	7.232587	2.496174	4.044763	5.517871	17
18	4.670543	5.971996	7.206756	2.478456	4.032306	5.503009	18
19	4.650598	5.949742	7.180692	2.460737	4.020001	5.488063	19
20	4.630637	5.927366	7.154394	2.443704	4.007850	5.473024	20
21	4.610657	5.904862	7.127851	2.426670	3.995839	5.457883	21
22	4.590657	5.882224	7.101051	2.409637	3.983966	5.442630	22
23	4.570635	5.859443	7.073985	2.393289	3.972236	5.427256	23
24	4.550590	5.836514	7.046643	2.376940	3.960632	5.411750	24
25	4.530518	5.813428	7.019012	2.360590	3.949155	5.396102	25
26	4.510419	5.790177	6.991081	2.345601	3.937808	5.380300	26
27	4.490285	5.766751	6.962837	2.329925	3.926557	5.364332	27
28	4.470118	5.743143	6.934267	2.314919	3.915421	5.348186	28
29	4.449913	5.719341	6.905358	2.301245	3.904386	5.331849	29
30	4.429661	5.695336	6.876095	2.286880	3.893418	5.315308	30
31	4.409365	5.671117	6.846463	2.273159	3.882537	5.298549	31
32	4.389017	5.646671	6.816447	2.260068	3.871728	5.281558	32
33	4.368615	5.621987	6.786029	2.247589	3.860976	5.264317	33
34	4.348150	5.597052	6.755192	2.235703	3.850267	5.246812	34
35	4.327616	5.571850	6.723918	2.225019	3.839587	5.229025	35
36	4.307002	5.546369	6.692187	2.213622	3.828908	5.210938	36
37	4.286309	5.520591	6.659978	2.203379	3.818246	5.192534	37
38	4.265529	5.494501	6.627271	2.194237	3.807574	5.173791	38
39	4.244646	5.468079	6.594041	2.185544	3.796864	5.154689	39
40	4.223652	5.441308	6.560266	2.177851	3.786104	5.135206	40
41	4.202535	5.414167	6.525919	2.169961	3.775266	5.115321	41
42	4.181292	5.386634	6.490974	2.164093	3.764354	5.095001	42
43	4.159894	5.358687	6.455401	2.157945	3.753312	5.074229	43
44	4.138342	5.330301	6.419172	2.153101	3.742144	5.052974	44
45	4.116610	5.301449	6.382254	2.148940	3.730809	5.031208	45
46	4.094683	5.272104	6.344613	2.145394	3.719284	5.008898	46
47	4.072544	5.242236	6.306212	2.142871	3.707541	4.986013	47
48	4.050168	5.211812	6.267015	2.140798	3.695544	4.962516	48
49	4.027533	5.180798	6.226979	2.139559	3.683265	4.938371	49
50	4.004615	5.149157	6.186062	2.139048	3.670665	4.913537	50
51	3.981382	5.116851	6.144219	2.139162	3.657704	4.887973	51
52	3.957804	5.083835	6.101398	2.139809	3.644341	4.861633	52
53	3.933848	5.050065	6.057549	2.140898	3.630533	4.834468	53
54	3.909478	5.015492	6.012615	2.142348	3.616235	4.806427	54

TABLE XXXV.

LOGARITHMS OF COMMUTATION COLUMNS. 4 PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
55	3.884653	4.980063	5.966537	2.144777	3.601399	4.777454	55
56	3.859320	4.943720	5.919250	2.147034	3.585951	4.747488	56
57	3.833437	4.906403	5.870687	2.150053	3.569849	4.716466	57
58	3.806937	4.868044	5.820773	2.152792	3.553008	4.684319	58
59	3.779772	4.828575	5.769431	2.155536	3.535374	4.650974	59
60	3.751874	4.787916	5.716576	2.158523	3.516874	4.616349	60
61	3.723164	4.745985	5.662117	2.161417	3.497415	4.580360	61
62	3.693561	4.702691	5.605956	2.163689	3.476903	4.542912	62
63	3.662986	4.657936	5.547990	2.165862	3.455258	4.503906	63
64	3.631330	4.611614	5.488103	2.167453	3.432362	4.463232	64
65	3.598491	4.563609	5.426174	2.168499	3.408097	4.420773	65
66	3.564344	4.513797	5.362072	2.168397	3.382334	4.376401	66
67	3.528771	4.462042	5.295651	2.167659	3.354951	4.329979	67
68	3.491613	4.408196	5.226761	2.165144	3.325778	4.281356	68
69	3.452741	4.352097	5.155230	2.161967	3.294689	4.230371	69
70	3.411946	4.293569	5.080877	2.156682	3.261456	4.176841	70
71	3.369066	4.232422	5.003504	2.149812	3.225922	4.120577	71
72	3.323877	4.168445	4.922895	2.140740	3.187853	4.061367	72
73	3.276158	4.101410	4.838814	2.129230	3.147027	3.998981	73
74	3.225666	4.031066	4.751004	2.115548	3.103203	3.933166	74
75	3.172086	3.957135	4.659182	2.098515	3.056051	3.863645	75
76	3.115146	3.879320	4.563037	2.078130	3.005309	3.790120	76
77	3.054520	3.797289	4.462229	2.054496	2.950652	3.712258	77
78	2.989797	3.710672	4.356378	2.026542	2.891660	3.629691	78
79	2.920598	3.619069	4.245065	1.994123	2.827963	3.542021	79
80	2.846473	3.522035	4.127820	1.956759	2.759111	3.448803	80
81	2.766924	3.419070	4.004116	1.913747	2.684611	3.349542	81
82	2.681433	3.309620	3.873354	1.864986	2.603958	3.243688	82
83	2.589349	3.193052	3.734850	1.808999	2.516498	3.130614	83
84	2.490106	3.068660	3.587811	1.746125	2.421694	3.009620	84
85	2.382883	2.935595	3.429850	1.674697	2.318731	2.879866	85
86	2.266963	2.792877	3.264212	1.594011	2.206928	2.740381	86
87	2.141556	2.639269	3.085198	1.504527	2.085551	2.589932	87
88	2.005401	2.473119	2.892628	1.402587	1.953368	2.426855	88
89	1.857863	2.292249	2.684587	1.307105	1.809896	2.248936	89
90	1.690496	2.093104	2.458961	1.189538	1.646090	2.052475	90
91	1.500732	1.874339	2.214326	1.038238	1.459332	1.836167	91
92	1.290868	1.635477	1.949044	0.864606	1.252269	1.599652	92
93	1.059352	1.374048	1.660200	0.670708	1.023431	1.340502	93
94	0.801987	1.086267	1.343765	0.450019	0.768591	1.054941	94
95	0.515372	0.767812	0.994349	0.197308	0.484424	0.738716	95
96	0.197308	0.412062	0.603348	$\bar{1}$.927550	0.169018	0.385307	96
97	$\bar{1}$.824887	0.003258	0.155108	$\bar{1}$.586005	$\bar{1}$.798940	$\bar{1}$.978890	97
98	$\bar{1}$.409913	$\bar{1}$.530656	$\bar{1}$.625028	$\bar{1}$.216789	$\bar{1}$.387276	$\bar{1}$.509385	98
99	$\bar{2}$.915759	$\bar{2}$.915759	$\bar{2}$.915759	$\bar{2}$.898726	$\bar{2}$.898726	$\bar{2}$.898726	99

TABLE XXXVI.

COMMUTATION COLUMNS. $4\frac{1}{2}$ PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	64,392.8	1,232,047.6	21,206,324.6	399.297	11,338.107	318.856.514	10
11	61,220.7	1,167,654.8	19,974,277.0	380.923	10,938.810	307,518.407	11
12	58,203.5	1,106,434.1	18,806,622.2	362.827	10,557.887	296,579.597	12
13	55,334.1	1,048,230.6	17,700,188.1	346.123	10,195.060	286,021.710	13
14	52,605.2	992,896.5	16,651,957.5	330.701	9,848.937	275,826.650	14
15	50,009.3	940,291.3	15,659,061.0	315.471	9,518.236	265,977.713	15
16	47,540.2	890,282.0	14,718,769.7	300.940	9,202.765	256,459.477	16
17	45,192.2	842,741.8	13,828,487.7	287.528	8,901.825	247,256.712	17
18	42,958.6	797,549.6	12,985,745.9	274.714	8,614.297	238,354.887	18
19	40,833.9	754,591.0	12,188,196.3	262.469	8,339.583	229,740.590	19
20	38,813.1	713,757.1	11,433,605.3	251.166	8,077.114	221,401.007	20
21	36,890.5	674,944.0	10,719,848.2	240.351	7,825.948	213,323.893	21
22	35,061.5	638,053.5	10,044,904.2	230.001	7,585.597	205,497.945	22
23	33,321.7	602,992.0	9,406,850.7	220.444	7,355.596	197,912.348	23
24	31,666.4	569,670.3	8,803,858.7	211.284	7,135.152	190,556.752	24
25	30,091.5	538,003.9	8,234,188.4	202.504	6,923.868	183,421.600	25
26	28,593.2	507,912.4	7,696,184.5	194.698	6,721.364	176,497.732	26
27	27,167.2	479,319.2	7,188,272.1	186.897	6,526.666	169,776.368	27
28	25,810.4	452,152.0	6,708,952.9	179.686	6,339.769	163,249.702	28
29	24,519.3	426,341.6	6,256,800.9	173.283	6,160.083	156,909.933	29
30	23,290.1	401,822.3	5,830,459.3	166.843	5,986.800	150,749.850	30
31	22,120.4	378,532.2	5,428,637.0	160.881	5,819.957	144,763.050	31
32	21,007.0	356,411.8	5,050,104.8	155.357	5,659.076	138,943.093	32
33	19,947.0	335,404.8	4,693,693.0	150.234	5,503.719	133,284.017	33
34	18,937.8	315,457.8	4,358,288.2	145.479	5,353.485	127,780.298	34
35	17,976.8	296,520.0	4,042,830.4	141.264	5,208.006	122,426.813	35
36	17,061.5	278,543.2	3,746,310.4	136.947	5,066.742	117,218.807	36
37	16,189.7	261,481.7	3,467,767.2	133.115	4,929.795	112,152.065	37
38	15,359.5	245,292.0	3,206,285.5	129.719	4,796.680	107,222.270	38
39	14,568.4	229,932.5	2,960,993.5	126.539	4,666.961	102,425.590	39
40	13,814.5	215,364.1	2,731,061.0	123.723	4,540.422	97,758.629	40
41	13,095.9	201,549.6	2,515,696.9	120.914	4,416.699	93,218.207	41
42	12,411.0	188,453.7	2,314,147.3	118.721	4,295.785	88,801.508	42
43	11,757.9	176,042.7	2,125,693.6	116.492	4,177.064	84,505.723	43
44	11,135.0	164,284.8	1,949,650.9	114.648	4,060.572	80,328.659	44
45	10,540.9	153,149.8	1,785,366.1	113.012	3,945.924	76,268.087	45
46	9,973.97	142,608.93	1,632,216.26	111.555	3,832.912	72,322.163	46
47	9,432.90	132,634.96	1,489,607.33	110.380	3,721.357	68,489.251	47
48	8,916.33	123,202.06	1,356,972.37	109.329	3,610.977	64,767.894	48
49	8,423.02	114,285.73	1,233,770.31	108.496	3,501.648	61,156.917	49
50	7,951.85	105,862.71	1,119,484.58	107.849	3,393.152	57,655.269	50
51	7,501.55	97,910.86	1,013,621.87	107.362	3,285.303	54,262.117	51
52	7,071.17	90,409.31	915,711.01	107.007	3,177.941	50,976.814	52
53	6,659.66	83,338.14	825,301.70	106.762	3,070.934	47,798.873	53
54	6,266.11	76,678.48	741,963.56	106.607	2,964.172	44,727.939	54

TABLE XXXVI.

COMMUTATION COLUMNS. $4\frac{1}{2}$ PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	5,889.67	70,412.37	665,285.08	106.692	2,857.565	41,763.767	55
56	5,529.36	64,522.70	594,872.71	106.735	2,750.873	38,906.202	56
57	5,184.51	58,993.34	530,350.01	106.965	2,644.138	36,155.329	57
58	4,854.29	53,808.83	471,356.67	107.127	2,537.173	33,511.191	58
59	4,538.14	48,954.54	417,547.84	107.290	2,430.046	30,974.018	59
60	4,235.43	44,416.40	368,593.30	107.513	2,322.756	28,543.972	60
61	3,945.52	40,180.97	324,176.90	107.715	2,215.243	26,221.216	61
62	3,667.90	36,235.45	283,995.93	107.761	2,107.528	24,005.973	62
63	3,402.20	32,567.55	247,760.48	107.784	1,999.767	21,898.445	63
64	3,147.90	29,165.35	215,192.93	107.662	1,891.983	19,898.678	64
65	2,904.68	26,017.45	186,027.58	107.405	1,784.321	18,006.695	65
66	2,672.20	23,112.77	160,010.13	106.866	1,676.916	16,222.374	66
67	2,450.27	20,440.57	136,897.36	106.174	1,570.050	14,545.458	67
68	2,238.58	17,990.30	116,456.79	105.056	1,463.876	12,975.408	68
69	2,037.12	15,751.72	98,466.49	103.791	1,358.820	11,511.532	69
70	1,845.61	13,714.60	82,714.77	102.045	1,255.029	10,152.712	70
71	1,664.09	11,868.99	69,000.17	99.9629	1,152.9835	8,897.6832	71
72	1,492.47	10,204.90	57,131.18	97.4282	1,053.0206	7,744.6997	72
73	1,330.77	8,712.43	46,926.28	94.4261	955.5924	6,691.6791	73
74	1,179.04	7,381.66	38,213.85	91.0598	861.1663	5,736.0867	74
75	1,037.20	6,202.62	30,832.19	87.1385	770.1065	4,874.9204	75
76	905.403	5,165.420	24,629.570	82.7453	682.9680	4,104.8139	76
77	783.670	4,260.017	19,464.150	77.9877	600.2227	3,421.8459	77
78	671.933	3,476.347	15,204.133	72.7760	522.2350	2,821.6232	78
79	570.223	2,804.414	11,727.786	67.2183	449.4590	2,299.3882	79
80	478.451	2,234.191	8,923.372	61.3819	382.2407	1,849.9292	80
81	396.465	1,755.740	6,689.181	55.3280	320.8588	1,467.6885	81
82	324.064	1,359.275	4,933.441	49.2155	265.5308	1,146.8297	82
83	260.894	1,035.211	3,574.166	43.0558	216.3153	881.2989	83
84	206.604	774.317	2,538.955	37.0744	173.2595	664.9836	84
85	160.632	567.713	1,764.638	31.3014	136.1851	491.7241	85
86	122.413	407.081	1,196.925	25.8699	104.8837	355.5390	86
87	91.2723	284.6678	789.8437	20.9521	79.0138	250.6553	87
88	66.3897	193.3955	505.1759	16.4894	58.0617	171.6415	88
89	47.0415	127.0058	311.7804	13.1716	41.5723	113.5798	89
90	31.8442	79.9643	184.7746	9.99977	28.40072	72.00746	90
91	20.4731	48.1201	104.8103	7.02435	18.40095	43.60674	91
92	12.5671	27.6470	56.6902	4.68696	11.37660	25.20579	92
93	7.33902	15.07986	29.04321	2.98476	6.68964	13.82919	93
94	4.03822	7.74084	13.96335	1.78706	3.70488	7.13955	94
95	2.07726	3.70262	6.22251	.993905	1.917819	3.434666	95
96	.993905	1.62536	2.51989	.531500	.923914	1.516847	96
97	.419605	.631453	.894534	.240922	.392414	.592933	97
98	.160615	.211848	.263081	.102465	.151492	.200519	98
99	.051233	.051233	.051233	.049027	.049027	.049027	99

TABLE XXXVI.

LOGARITHMS OF COMMUTATION COLUMNS. $4\frac{1}{2}$ PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
10	4.808837	6.090628	7.326465	2.601296	4.054541	5.503595	10
11	4.786898	6.067315	7.300471	2.580837	4.038970	5.487871	11
12	4.764949	6.043926	7.274311	2.559699	4.023576	5.472141	12
13	4.742993	6.020457	7.247978	2.539230	4.008390	5.456399	13
14	4.721029	5.996904	7.221465	2.519436	3.993390	5.440636	14
15	4.699051	5.973262	7.194766	2.498960	3.978557	5.424845	15
16	4.677061	5.949528	7.167871	2.478480	3.963919	5.409019	16
17	4.655063	5.925695	7.140775	2.458681	3.949479	5.393148	17
18	4.633050	5.901758	7.113467	2.438880	3.935220	5.377224	18
19	4.611021	5.877712	7.085939	2.419078	3.921144	5.361238	19
20	4.588978	5.853551	7.058183	2.399962	3.907256	5.345180	20
21	4.566915	5.829268	7.030189	2.380845	3.893537	5.329040	21
22	4.544831	5.804857	7.001946	2.361729	3.879990	5.312808	22
23	4.522727	5.780312	6.973444	2.343298	3.866618	5.296473	23
24	4.500599	5.755624	6.944673	2.324866	3.853403	5.280024	24
25	4.478444	5.730785	6.915621	2.306433	3.840349	5.263451	25
26	4.456262	5.705789	6.886275	2.289361	3.827457	5.246739	26
27	4.434045	5.680625	6.856624	2.271602	3.814692	5.229878	27
28	4.411795	5.655284	6.826655	2.254514	3.802074	5.212852	28
29	4.389508	5.629758	6.796352	2.238756	3.789586	5.195651	29
30	4.367172	5.604034	6.765703	2.222308	3.777195	5.178257	30
31	4.344793	5.578103	6.734691	2.206505	3.764920	5.160658	31
32	4.322363	5.551952	6.703300	2.191330	3.752746	5.142837	32
33	4.299877	5.525569	6.671515	2.176769	3.740656	5.124778	33
34	4.277329	5.498941	6.639316	2.162800	3.728637	5.106464	34
35	4.254713	5.472054	6.606686	2.150033	3.716672	5.087876	35
36	4.232016	5.444893	6.573604	2.136553	3.704729	5.068998	36
37	4.209240	5.417441	6.540050	2.124227	3.692829	5.049807	37
38	4.186377	5.389686	6.506002	2.113002	3.680941	5.030285	38
39	4.163411	5.361600	6.471437	2.102226	3.669034	5.010408	39
40	4.140334	5.333173	6.436331	2.092450	3.657096	4.990155	40
41	4.117134	5.304382	6.400658	2.082477	3.645098	4.969501	41
42	4.093808	5.275205	6.364391	2.074526	3.633043	4.948421	42
43	4.070328	5.245618	6.327501	2.066295	3.620871	4.926886	43
44	4.046692	5.215597	6.289957	2.059368	3.608587	4.904870	44
45	4.022877	5.185117	6.251727	2.053124	3.596148	4.882343	45
46	3.998868	5.154147	6.212778	2.047495	3.583529	4.859271	46
47	3.974645	5.122658	6.173072	2.042889	3.570702	4.835623	47
48	3.950186	5.090618	6.132571	2.038734	3.557625	4.811359	48
49	3.925468	5.057992	6.091234	2.035412	3.544273	4.786445	49
50	3.900468	5.024742	6.049018	2.032817	3.530603	4.760839	50
51	3.875151	4.990834	6.005876	2.030849	3.516575	4.734497	51
52	3.849491	4.956214	5.961759	2.029412	3.502146	4.707372	52
53	3.823452	4.920844	5.916613	2.028418	3.487270	4.679418	53
54	3.796998	4.884674	5.870383	2.027785	3.471903	4.650578	54

TABLE XXXVI.

LOGARITHMS OF COMMUTATION COLUMNS. $4\frac{1}{2}$ PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	λM_x	$\lambda R_x.$	AGE.
55	3.770091	4.847649	5.823008	2.028131	3.455997	4.620800	55
56	3.742675	4.809712	5.774424	2.028305	3.439470	4.590019	56
57	3.714708	4.770803	5.724563	2.029242	3.422285	4.558172	57
58	3.686126	4.730854	5.673350	2.029898	3.404350	4.525189	58
59	3.656878	4.689793	5.620706	2.030559	3.385615	4.490997	59
60	3.626897	4.647543	5.566547	2.031463	3.366004	4.455515	60
61	3.596104	4.604020	5.510782	2.032274	3.345421	4.418653	61
62	3.564418	4.559134	5.453312	2.032463	3.323774	4.380319	62
63	3.531760	4.512785	5.394032	2.032553	3.300980	4.340413	63
64	3.498021	4.464867	5.332828	2.032061	3.276917	4.298824	64
65	3.463099	4.415265	5.269577	2.031024	3.251473	4.255434	65
66	3.426869	4.363852	5.204148	2.028839	3.224512	4.210114	66
67	3.389214	4.310493	5.136395	2.026018	3.195914	4.162728	67
68	3.349972	4.255038	5.066165	2.021420	3.165504	4.113121	68
69	3.309017	4.197328	4.993288	2.016160	3.133162	4.061133	69
70	3.266139	4.137183	4.917583	2.008793	3.098654	4.006582	70
71	3.221176	4.074414	4.838850	1.999839	3.061823	3.949277	71
72	3.173904	4.008809	4.756873	1.988685	3.022437	3.889005	72
73	3.124103	3.940139	4.671416	1.975092	2.980273	3.825535	73
74	3.071528	3.868154	4.582221	1.959327	2.935087	3.758616	74
75	3.015864	3.792575	4.489004	1.940210	2.886551	3.687968	75
76	2.956842	3.713106	4.391457	1.917743	2.834400	3.613293	76
77	2.894133	3.629412	4.289235	1.892026	2.778313	3.534260	77
78	2.827326	3.541123	4.181962	1.861988	2.717866	3.450499	78
79	2.756045	3.447842	4.069216	1.827487	2.652690	3.361612	79
80	2.679837	3.349120	3.950529	1.788040	2.582337	3.267155	80
81	2.598205	3.244460	3.825373	1.742945	2.506314	3.166634	81
82	2.510631	3.133307	3.693150	1.692102	2.424115	3.059499	82
83	2.416464	3.015029	3.553175	1.634031	2.335087	2.945123	83
84	2.315138	2.888918	3.404655	1.569074	2.238697	2.822811	84
85	2.205832	2.754129	3.246656	1.495563	2.134129	2.691722	85
86	2.087829	2.609681	3.078067	1.412794	2.020708	2.550887	86
87	1.960339	2.454338	2.897541	1.321227	1.897703	2.399077	87
88	1.822101	2.286446	2.703443	1.217205	1.763890	2.234623	88
89	1.672481	2.103823	2.493849	1.119640	1.618804	2.055301	89
90	1.503030	1.902896	2.266642	0.999990	1.453329	1.857378	90
91	1.311184	1.682327	2.020404	0.846606	1.264840	1.639553	91
92	1.099236	1.441648	1.753508	0.670891	1.056013	1.401500	92
93	0.865638	1.178398	1.463045	0.474910	0.825403	1.140797	93
94	0.606190	0.888788	1.144990	0.252138	0.568774	0.853671	94
95	0.317491	0.568509	0.793966	$\bar{1}.997345$	0.282808	0.535885	95
96	$\bar{1}.997345$	0.210950	0.401382	$\bar{1}.725503$	$\bar{1}.965632$	0.180942	96
97	$\bar{1}.622841$	$\bar{1}.800341$	$\bar{1}.951597$	$\bar{1}.381876$	$\bar{1}.593744$	$\bar{1}.773005$	97
98	$\bar{1}.205785$	$\bar{1}.326024$	$\bar{1}.420089$	1.010577	$\bar{1}.180390$	$\bar{1}.302156$	98
99	$\bar{2}.709547$	$\bar{2}.709547$	$\bar{2}.709547$	$\bar{2}.690431$	$\bar{2}.690431$	$\bar{2}.690431$	99

TABLE XXXVII.

COMMUTATION COLUMNS.   5 PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	61,391.3	1,089,674.9	17,710,636.6	378.872	9,502.066	246,311.154	10
11	58,089.1	1,028,283.6	16,620,961.7	359.717	9,123.194	236,809.088	11
12	54,963.2	970,194.5	15,592,678.1	340.997	8,763.477	227,685.894	12
13	52,004.9	915,231.3	14,622,483.6	323.749	8,422.480	218,922.417	13
14	49,204.8	863,226.4	13,707,252.3	307.851	8,098.731	210,499.937	14
15	46,553.9	814,021.6	12,844,025.9	292.275	7,790.880	202,401.206	15
16	44,044.6	767,467.7	12,030,004.3	277.485	7,498.605	194,610.326	16
17	41,669.8	723,423.1	11,262,536.6	263.856	7,221.120	187,111.721	17
18	39,421.7	681,753.3	10,539,113.5	250.895	6,957.264	179,890.601	18
19	37,293.6	642,331.6	9,857,360.2	238.571	6,706.369	172,933.337	19
20	35,279.2	605,038.0	9,215,028.6	227.210	6,467.798	166,226.968	20
21	33,372.0	569,758.8	8,609,990.6	216.391	6,240.588	159,759.170	21
22	31,566.4	536,386.8	8,040,231.8	206.087	6,024.197	153,518.582	22
23	29,857.1	504,820.4	7,503,845.0	196.583	5,818.110	147,494.385	23
24	28,238.9	474,963.3	6,999,024.6	187.517	5,621.527	141,676.275	24
25	26,706.6	446,724.4	6,524,061.3	178.869	5,434.010	136,054.748	25
26	25,256.0	420,017.8	6,077,336.9	171.155	5,255.141	130,620.738	26
27	23,882.2	394,761.8	5,657,319.1	163.515	5,083.986	125,365.597	27
28	22,581.4	370,879.6	5,262,557.3	156.457	4,920.471	120,281.611	28
29	21,349.6	348,298.2	4,891,677.7	150.164	4,764.014	115,361.140	29
30	20,182.8	326,948.6	4,543,379.5	143.895	4,613.850	110,597.126	30
31	19,077.9	306,765.8	4,216,430.9	138.092	4,469.955	105,983.276	31
32	18,031.3	287,687.9	3,909,665.1	132.715	4,331.863	101,513.321	32
33	17,039.9	269,656.6	3,621,977.2	127.728	4,199.148	97,181.458	33
34	16,100.8	252,616.7	3,352,320.6	123.096	4,071.420	92,982.310	34
35	15,211.0	236,515.9	3,099,703.9	118.961	3,948.324	88,910.890	35
36	14,367.7	221,304.9	2,863,188.0	114.776	3,829.363	84,962.566	36
37	13,568.7	206,937.2	2,641,883.1	111.033	3,714.587	81,133.203	37
38	12,811.6	193,368.5	2,434,945.9	107.685	3,603.554	77,418.616	38
39	12,093.8	180,556.9	2,241,577.4	104.546	3,495.869	73,815.062	39
40	11,413.4	168,463.1	2,061,020.5	101.732	3,391.323	70,319.193	40
41	10,768.2	157,049.7	1,892,557.4	98.9489	3,289.591	66,927.870	41
42	10,156.4	146,281.46	1,735,507.74	96.6911	3,190.6419	63,638.2786	42
43	9,576.08	136,125.06	1,589,226.28	94.4239	3,093.9508	60,447.6367	43
44	9,025.68	126,548.98	1,453,101.22	92.4874	2,999.5269	57,353.6859	44
45	8,503.39	117,523.30	1,326,552.24	90.7332	2,907.0395	54,354.1590	45
46	8,007.72	109,019.91	1,209,028.94	89.1382	2,816.3063	51,447.1195	46
47	7,537.27	101,012.19	1,100,009.03	87.7777	2,727.1681	48,630.8132	47
48	7,090.58	93,474.92	998,996.84	86.5279	2,639.3904	45,903.6451	48
49	6,666.40	86,384.34	905,521.92	85.4596	2,552.8625	43,264.2547	49
50	6,263.50	79,717.94	819,137.58	84.5461	2,467.4029	40,711.3922	50
51	5,880.69	73,454.44	739,419.64	83.7630	2,382.8568	38,243.9893	51
52	5,516.89	67,573.75	665,965.20	83.0888	2,299.0938	35,861.1325	52
53	5,171.09	62,056.86	598,391.45	82.5041	2,216.0050	33,562.0387	53
54	4,842.34	56,885.77	536,334.59	81.9917	2,133.5009	31,346.0337	54

TABLE XXXVII.

COMMUTATION COLUMNS.   **5** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	4,529.77	52,043.43	479,448.82	81.6663	2,051.5092	29,212.5328	55
56	4,232.39	47,513.66	427,405.39	81.3100	1,969.8429	27,161.0236	56
57	3,949.55	43,281.27	379,891.73	81.0975	1,888.5329	25,191.1807	57
58	3,680.37	39,331.72	336,610.46	80.8333	1,807.4354	23,302.6478	58
59	3,424.28	35,651.35	297,278.74	80.5710	1,726.6021	21,495.2124	59
60	3,180.65	32,227.07	261,627.39	80.3543	1,646.0311	19,768.6103	60
61	2,948.84	29,046.42	229,400.32	80.1212	1,565.6768	18,122.5792	61
62	2,728.30	26,097.58	200,353.90	79.7744	1,485.5556	16,556.9024	62
63	2,518.61	23,369.28	174,256.32	79.4110	1,405.7812	15,071.3468	63
64	2,319.26	20,850.67	150,887.04	78.9433	1,326.3702	13,665.5656	64
65	2,129.88	18,531.41	130,036.37	78.3800	1,247.4269	12,339.1954	65
66	1,950.07	16,401.53	111,504.96	77.6153	1,169.0469	11,091.7685	66
67	1,779.60	14,451.46	95,103.43	76.7456	1,091.4316	9,922.7216	67
68	1,618.11	12,671.86	80,651.97	75.5758	1,014.6860	8,831.2900	68
69	1,465.48	11,053.75	67,980.11	74.3104	939.1102	7,816.6041	69
70	1,321.38	9,588.27	56,926.36	72.7125	864.7998	6,877.4939	70
71	1,185.75	8,266.89	47,338.09	70.8896	792.0873	6,012.6941	71
72	1,058.39	7,081.14	39,071.20	68.7631	721.1977	5,220.6068	72
73	939.232	6,022.748	31,990.065	66.3269	652.4346	4,499.4091	73
74	828.180	5,083.516	25,967.317	63.6577	586.1077	3,846.9745	74
75	725.085	4,255.336	20,883.801	60.6264	522.4500	3,260.8668	75
76	629.931	3,530.251	16,628.465	57.2956	461.8236	2,738.4168	76
77	542.639	2,900.320	13,098.214	53.7442	404.5280	2,276.5932	77
78	463.054	2,357.681	10,197.894	49.9138	350.7838	1,872.0652	78
79	391.090	1,894.627	7,840.213	45.8824	300.8700	1,521.2814	79
80	326.585	1,503.537	5,945.586	41.6991	254.9876	1,220.4114	80
81	269.334	1,176.952	4,442.049	37.4075	213.2885	965.4238	81
82	219.102	907.618	3,265.097	33.1163	175.8810	752.1353	82
83	175.551	688.516	2,357.479	28.8336	142.7647	576.2543	83
84	138.358	512.965	1,668.963	24.7098	113.9311	433.4896	84
85	107.0600	374.6070	1,155.9980	20.7627	89.2213	319.5585	85
86	81.1989	267.5473	781.3912	17.0782	68.4586	230.3372	86
87	60.2541	186.3484	513.8439	13.7658	51.3804	161.8786	87
88	43.6191	126.0943	327.4955	10.7822	37.6146	110.4982	88
89	30.7598	82.4752	201.4012	8.57174	26.8324	72.88355	89
90	20.7233	51.7154	118.9260	6.47659	18.26065	46.05116	90
91	13.2599	30.9921	67.2106	4.52782	11.78406	27.79151	91
92	8.10065	17.73217	36.21852	3.00676	7.25624	16.00745	92
93	4.70813	9.63152	18.48635	1.90567	4.24948	8.75121	93
94	2.57826	4.92339	8.85483	1.13554	2.34381	4.50173	94
95	1.31995	2.34513	3.93144	.628545	1.208272	2.157920	95
96	.628544	1.02518	1.58631	.334520	.579727	.949648	96
97	.264094	.396640	.561125	.150911	.245207	.369921	97
98	.100607	.132546	.164485	.063878	.094296	.124714	98
99	.031939	.031939	.031939	.030418	.030418	.030418	99

TABLE XXXVII.

LOGARITHMS OF COMMUTATION COLUMNS. 5 PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
10	4.788107	6.037297	7.248234	2.578493	3.977818	5.391484	10
11	4.764095	6.012113	7.220656	2.555961	3.960147	5.374398	11
12	4.740072	5.986859	7.192921	2.532750	3.942677	5.357336	12
13	4.716044	5.961531	7.165021	2.510208	3.925440	5.340290	13
14	4.692007	5.936125	7.136950	2.488341	3.908417	5.323252	14
15	4.667956	5.910636	7.108701	2.465792	3.891587	5.306214	15
16	4.643893	5.885060	7.080266	2.443239	3.874981	5.289166	16
17	4.619822	5.859393	7.051636	2.421366	3.858605	5.272101	17
18	4.595736	5.833627	7.022804	2.399493	3.842438	5.255008	18
19	4.571634	5.807759	6.993760	2.377618	3.826488	5.237878	19
20	4.547518	5.781783	6.964496	2.356428	3.810757	5.220701	20
21	4.523382	5.755691	6.935003	2.335239	3.795226	5.203466	21
22	4.499225	5.729478	6.905269	2.314050	3.779899	5.186161	22
23	4.475048	5.703137	6.875284	2.293546	3.764782	5.168775	23
24	4.450847	5.676660	6.845037	2.273041	3.749855	5.151297	24
25	4.426619	5.650039	6.814518	2.252535	3.735120	5.133713	25
26	4.402364	5.623268	6.783714	2.233390	3.720584	5.116012	26
27	4.378074	5.596335	6.752611	2.213558	3.706205	5.098178	27
28	4.353751	5.569232	6.721197	2.194396	3.692007	5.080199	28
29	4.329390	5.541951	6.689458	2.176566	3.677973	5.062059	29
30	4.304982	5.514479	6.657379	2.158045	3.664064	5.043744	30
31	4.280530	5.486807	6.624945	2.140168	3.650304	5.025237	31
32	4.256026	5.458922	6.592139	2.122921	3.636674	5.006523	32
33	4.231468	5.430811	6.558945	2.106286	3.623161	4.987583	33
34	4.206847	5.402462	6.525346	2.090244	3.609746	4.968401	34
35	4.182158	5.373861	6.491321	2.075404	3.596412	4.948955	35
36	4.157387	5.344991	6.456850	2.059851	3.583126	4.929228	36
37	4.132539	5.315838	6.421913	2.045453	3.569911	4.909199	37
38	4.107603	5.286386	6.386489	2.032155	3.556731	4.888846	38
39	4.082563	5.256614	6.350554	2.019306	3.543555	4.868145	39
40	4.057414	5.226505	6.314082	2.007457	3.530369	4.847074	40
41	4.032141	5.196037	6.277049	1.995411	3.517142	4.825607	41
42	4.006741	5.165189	6.239427	1.985386	3.503878	4.803718	42
43	3.981188	5.133938	6.201186	1.975082	3.490513	4.781379	43
44	3.955480	5.102258	6.162296	1.966083	3.477053	4.758561	44
45	3.929592	5.070124	6.122724	1.957766	3.463451	4.735233	45
46	3.903509	5.037506	6.082436	1.950064	3.449680	4.711361	46
47	3.877214	5.004373	6.041397	1.943384	3.435712	4.686911	47
48	3.850682	4.970694	5.999564	1.937156	3.421504	4.661847	48
49	3.823891	4.936435	5.956899	1.931761	3.407027	4.636130	49
50	3.796817	4.901556	5.913357	1.927093	3.392240	4.609716	50
51	3.769428	4.866018	5.868891	1.923052	3.377098	4.582563	51
52	3.741694	4.829778	5.823452	1.919543	3.361557	4.554624	52
53	3.713582	4.792790	5.776985	1.916476	3.345571	4.525848	53
54	3.685056	4.755003	5.729436	1.913770	3.329093	4.496183	54

TABLE XXXVII.

LOGARITHMS OF COMMUTATION COLUMNS.   **5** PER CENT.

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
55	3.656076	4.716366	5.680742	1.912043	3.312073	4.465569	55
56	3.626586	4.676818	5.630840	1.910144	3.294432	4.433946	56
57	3.596547	4.636300	5.579660	1.909007	3.276125	4.401248	57
58	3.565892	4.594743	5.527128	1.907590	3.257063	4.367405	58
59	3.534570	4.552076	5.473164	1.906179	3.237192	4.332341	59
60	3.502516	4.508221	5.417684	1.905009	3.216438	4.295976	60
61	3.469651	4.463092	5.360594	1.903747	3.194702	4.258220	61
62	3.435892	4.416600	5.301798	1.901863	3.171889	4.218979	62
63	3.401160	4.368645	5.241189	1.899881	3.147918	4.178152	63
64	3.365349	4.319120	5.178652	1.897315	3.122665	4.135627	64
65	3.328354	4.267908	5.114065	1.894205	3.096015	4.091287	65
66	3.290050	4.214884	5.047294	1.889947	3.067832	4.045001	66
67	3.250322	4.159912	4.978196	1.885054	3.037997	3.996631	67
68	3.209008	4.102840	4.906615	1.878383	3.006332	3.946025	68
69	3.165979	4.043509	4.832382	1.871050	2.972717	3.893018	69
70	3.121029	3.981740	4.755314	1.861609	2.936916	3.837430	70
71	3.073992	3.917342	4.675211	1.850582	2.898773	3.779069	71
72	3.024648	3.850103	4.591857	1.837355	2.858055	3.717721	72
73	2.972773	3.779794	4.505015	1.821689	2.814537	3.653156	73
74	2.918125	3.706164	4.414427	1.803851	2.767918	3.585119	74
75	2.860389	3.628933	4.319810	1.782662	2.718045	3.513332	75
76	2.799293	3.547806	4.220852	1.758122	2.664476	3.437499	76
77	2.734511	3.462446	4.117212	1.730332	2.606948	3.357286	77
78	2.665632	3.372485	4.049136	1.698221	2.545040	3.272321	78
79	2.592277	3.277524	3.894328	1.661647	2.478379	3.182209	79
80	2.513996	3.177114	3.774195	1.620127	2.406519	3.086506	80
81	2.430291	3.070759	3.647583	1.572958	2.328967	2.984718	81
82	2.340645	2.957903	3.513896	1.520042	2.245219	2.876296	82
83	2.244404	2.837914	3.372448	1.459899	2.154621	2.760614	83
84	2.141005	2.710088	3.222446	1.392869	2.056642	2.636979	84
85	2.029627	2.573576	3.062957	1.317285	1.950468	2.504550	85
86	1.909550	2.427401	2.892869	1.232443	1.835428	2.362364	86
87	1.779987	2.270325	2.710831	1.138802	1.710797	2.209189	87
88	1.639677	2.100695	2.515205	1.032707	1.575356	2.043355	88
89	1.487983	1.916323	2.304062	0.933069	1.428659	1.862629	89
90	1.316459	1.713619	2.075277	0.811346	1.261516	1.663240	90
91	1.122540	1.491251	1.827438	0.655890	1.071295	1.443912	91
92	0.908520	1.248762	1.558930	0.478101	0.860712	1.204322	92
93	0.672848	0.983695	1.266851	0.280048	0.628336	0.942069	93
94	0.411327	0.692264	0.947181	0.055202	0.369922	0.653380	94
95	0.120556	0.370167	0.594551	$\overline{1}.798336$	0.082165	0.334035	95
96	$\overline{1}.798336$	0.010800	0.200388	$\overline{1}.524422$	$\overline{1}.763223$	$\overline{1}.977563$	96
97	$\overline{1}.421759$	$\overline{1}.598397$	$\overline{1}.749060$	$\overline{1}.178721$	$\overline{1}.389533$	$\overline{1}.568109$	97
98	$\overline{1}.002630$	$\overline{1}.122367$	$\overline{1}.216127$	$\overline{2}.805349$	$\overline{2}.974493$	$\overline{1}.095915$	98
99	$\overline{2}.504319$	$\overline{2}.504319$	$\overline{2}.504319$	$\overline{2}.483130$	$\overline{2}.483130$	$\overline{2}.483130$	99

TABLE XXXVIII.

COMMUTATION COLUMNS.   **6** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	55,839.4	864,777.4	12,598,316.8	341.358	6,889.834	151,664.904	10
11	52,337.5	808,938.0	11,733,539.4	321.042	6,548.476	144,775.070	11
12	49,054.0	756,600.5	10,924,601.4	301.464	6,227.434	138,226.594	12
13	45,975.8	707,546.5	10,168,000.9	283.515	5,925.970	131,999.160	13
14	43,089.8	661,570.7	9,460,454.4	267.050	5,642.455	126,073.190	14
15	40,383.8	618,480.9	8,798,883.7	251.146	5,375.405	120,430.735	15
16	37,846.7	578,097.1	8,180,402.8	236.188	5,124.259	115,055.330	16
17	35,468.3	540,250.4	7,602,305.7	222.468	4,888.071	109,931.071	17
18	33,238.2	504,782.1	7,062,055.3	209.545	4,665.603	105,043.000	18
19	31,147.3	471,543.9	6,557,273.2	197.372	4,456.058	100,377.397	19
20	29,186.8	440,396.6	6,085,729.3	186.200	4,258.686	95,921.339	20
21	27,348.5	411,209.8	5,645,332.7	175.661	4,072.486	91,662.653	21
22	25,624.8	383,861.3	5,234,122.9	165.718	3,896.825	87,590.167	22
23	24,008.6	358,236.5	4,850,261.6	156.584	3,731.107	83,693.342	23
24	22,493.1	334,227.9	4,492,025.1	147.954	3,574.523	79,962.235	24
25	21,071.9	311,734.8	4,157,797.2	139.799	3,426.569	76,387.712	25
26	19,739.4	290,662.9	3,846,062.4	132.508	3,286.770	72,961.143	26
27	18,489.6	270,923.5	3,555,399.5	125.399	3,154.262	69,674.373	27
28	17,317.6	252,433.9	3,284,476.0	118.855	3,028.863	66,520.111	28
29	16,218.4	235,116.3	3,032,042.1	112.998	2,910.008	63,491.248	29
30	15,187.5	218,897.9	2,796,925.8	107.258	2,797.010	60,581.240	30
31	14,220.5	203,710.4	2,578,027.9	101.962	2,689.752	57,784.230	31
32	13,313.6	189,489.9	2,374,317.5	97.0677	2,587.7904	55,094.4779	32
33	12,463.0	176,176.3	2,184,827.6	92.5386	2,490.7227	52,506.6875	33
34	11,665.0	163,713.3	2,008,651.3	88.3414	2,398.1841	50,015.9648	34
35	10,916.4	152,048.3	1,844,938.0	84.5684	2,309.8427	47,617.7807	35
36	10,213.9	141,131.9	1,692,889.7	80.8236	2,225.2743	45,307.9380	36
37	9,554.90	130,918.01	1,551,757.77	77.4503	2,144.4507	43,082.6637	37
38	8,936.61	121,363.11	1,420,839.76	74.4061	2,067.0004	40,938.2130	38
39	8,356.36	112,426.50	1,299,476.65	71.5555	1,992.5943	38,871.2126	39
40	7,811.80	104,070.14	1,187,050.15	68.9727	1,921.0388	36,878.6183	40
41	7,300.66	96,258.34	1,082,980.01	66.4531	1,852.0661	34,957.5795	41
42	6,820.97	88,957.68	986,721.67	64.3241	1,785.6130	33,105.5134	42
43	6,370.54	82,136.71	897,763.99	62.2233	1,721.2889	31,319.9004	43
44	5,947.73	75,766.17	815,627.28	60.3722	1,659.0656	29,598.6115	44
45	5,550.68	69,818.44	739,861.11	58.6684	1,598.6934	27,939.5459	45
16	5,177.82	64,267.76	670,042.67	57.0933	1,540.0250	26,340.8525	46
47	4,827.64	59,089.94	605,774.91	55.6915	1,482.9317	24,800.8275	47
48	4,498.69	54,262.30	546,684.97	54.3806	1,427.2402	23,317.8958	48
49	4,189.66	49,763.61	492,422.67	53.2026	1,372.8596	21,890.6556	49
50	3,899.32	45,573.95	442,659.06	52.1373	1,319.6570	20,517.7960	50
51	3,626.46	41,674.63	397,085.11	51.1671	1,267.5197	19,198.1390	51
52	3,370.02	38,048.17	355,410.48	50.2765	1,216.3526	17,930.6193	52
53	3,128.99	34,678.15	317,362.31	49.4517	1,166.0761	16,714.2667	53
54	2,902.42	31,549.16	282,684.16	48.6809	1,116.6244	15,548.1906	54

TABLE XXXVIII.

COMMUTATION COLUMNS.   **6** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	2,689.45	28,646.74	251,135.00	48.0303	1,067.9435	14,431.5662	55
56	2,489.19	25,957.29	222,488.26	47.3696	1,019.9132	13,363.6227	56
57	2,300.93	23,468.10	196,530.97	46.8001	972.5436	12,343.7095	57
58	2,123.88	21,167.17	173,062.87	46.2075	925.7435	11,371.1659	58
59	1,957.46	19,043.29	151,895.70	45.6231	879.5360	10,445.4224	59
60	1,801.03	17,085.83	132,852.41	45.0711	833.9129	9,565.8864	60
61	1,654.02	15,284.80	115,766.58	44.5164	788.8418	8,731.9735	61
62	1,515.88	13,630.78	100,481.78	43.9056	744.3254	7,943.1317	62
63	1,386.17	12,114.90	86,851.00	43.2933	700.4198	7,198.8063	63
64	1,264.41	10,728.73	74,736.10	42.6323	657.1265	6,498.3865	64
65	1,150.21	9,464.32	64,007.37	41.9288	614.4942	5,841.2600	65
66	1,043.18	8,314.11	54,543.05	41.1279	572.5654	5,226.7658	66
67	943.001	7,270.934	46,228.937	40.2835	531.4375	4,654.2004	67
68	849.339	6,327.933	38,958.003	39.2952	491.1540	4,122.7629	68
69	761.967	5,478.594	32,630.070	38.2728	451.8588	3,631.6089	69
70	680.564	4,716.627	27,151.476	37.0965	413.5860	3,179.7501	70
71	604.947	4,036.063	22,434.849	35.8253	376.4895	2,766.1641	71
72	534.878	3,431.116	18,398.786	34.4228	340.6642	2,389.6746	72
73	470.180	2,896.238	14,967.670	32.8900	306.2414	2,049.0104	73
74	410.676	2,426.058	12,071.432	31.2686	273.3514	1,742.7690	74
75	356.161	2,015.382	9,645.374	29.4987	242.0828	1,469.4176	75
76	306.503	1,659.221	7,629.992	27.6150	212.5841	1,227.3348	76
77	261.538	1,352.718	5,970.771	25.6589	184.9691	1,014.7507	77
78	221.075	1,091.180	4,618.053	23.6054	159.3102	829.7816	78
79	184.956	870.105	3,526.873	21.4942	135.7048	670.4714	79
80	152.993	685.149	2,656.768	19.3502	114.2106	534.7666	80
81	124.982	532.156	1,971.619	17.1949	94.8604	420.5560	81
82	100.713	407.174	1,439.463	15.0788	77.6655	325.6956	82
83	79.9335	306.4614	1,032.2888	13.0049	62.5867	248.0301	83
84	62.4041	226.5279	725.8274	11.0398	49.5818	185.4434	84
85	47.8320	164.1238	499.2995	9.18883	38.54196	135.86156	85
86	35.9357	116.2918	335.1757	7.48689	29.35313	97.31960	86
87	26.4147	80.3561	218.8839	5.97784	21.86624	67.96647	87
88	18.9417	53.9414	138.5278	4.63802	15.88840	46.10023	88
89	13.2315	34.9997	84.5864	3.65240	11.25038	30.21183	89
90	8.83015	21.76824	49.58671	2.73362	7.59798	18.96145	90
91	5.59670	12.93809	27.81847	1.89306	4.86436	11.36347	91
92	3.38684	7.34139	14.88038	1.24526	2.97130	6.49911	92
93	1.94988	3.95455	7.53899	.781790	1.726036	3.527809	93
94	1.05772	2.00467	3.58444	.461455	.944246	1.801773	94
95	.536392	.946947	1.579772	.253015	.482791	.857527	95
96	.253015	.410555	.632825	.133387	.229776	.374736	96
97	.165306	.157540	.222270	.059607	.096389	.144960	97
98	.039738	.052234	.064730	.024993	.036782	.048571	98
99	.012496	.012496	.012496	.011789	.011789	.011789	99

TABLE XXXVIII.

LOGARITHMS OF COMMUTATION COLUMNS.   **6** PER CENT.

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x.	AGE.
10	4.746941	5.936905	7.100313	2.533211	3.838209	5.180885	10
11	4.718813	5.907915	7.069429	2.506562	3.816140	5.160694	11
12	4.690674	5.878866	7.038405	2.479235	3.794309	5.140591	12
13	4.662529	5.849755	7.007236	2.452576	3.772759	5.120571	13
14	4.634375	5.820576	6.975912	2.426592	3.751468	5.100623	14
15	4.606207	5.791327	6.944427	2.399927	3.730411	5.080738	15
16	4.578028	5.762000	6.912775	2.373257	3.709631	5.060907	16
17	4.549840	5.732595	6.880945	2.347268	3.689138	5.041120	17
18	4.521637	5.703104	6.848931	2.321278	3.668908	5.021367	18
19	4.493420	5.673522	6.816723	2.295286	3.648951	5.001636	19
20	4.465187	5.643844	6.784313	2.269981	3.629276	4.981915	20
21	4.436934	5.614064	6.751690	2.244675	3.609860	4.962192	21
22	4.408661	5.584174	6.718844	2.219369	3.590711	4.942456	22
23	4.380367	5.554170	6.685766	2.194749	3.571838	4.922691	23
24	4.352049	5.524042	6.652442	2.170127	3.553218	4.902885	24
25	4.323704	5.493786	6.618864	2.145505	3.534859	4.883023	25
26	4.295334	5.463389	6.585016	2.122242	3.516769	4.863092	26
27	4.266927	5.432847	6.550888	2.098294	3.498898	4.843073	27
28	4.238487	5.402148	6.516466	2.075016	3.481280	4.822953	28
29	4.210009	5.371283	6.481735	2.053069	3.463894	4.802714	29
30	4.181485	5.340242	6.446681	2.030431	3.446694	4.782338	30
31	4.152916	5.309013	6.411288	2.008438	3.429712	4.761810	31
32	4.124296	5.277586	6.375539	1.987075	3.412929	4.741108	32
33	4.095621	5.245948	6.339418	1.966323	3.396325	4.720214	33
34	4.066884	5.214084	6.302904	1.946164	3.379883	4.699109	34
35	4.038078	5.181981	6.265982	1.927208	3.363583	4.677769	35
36	4.009191	5.149625	6.228628	1.907538	3.347384	4.656174	36
37	3.980226	5.116999	6.190824	1.889023	3.331316	4.634303	37
38	3.951173	5.084087	6.152545	1.871609	3.315341	4.612129	38
39	3.922017	5.050869	6.113768	1.854643	3.299419	4.589628	39
40	3.892751	5.017327	6.074469	1.838677	3.283536	4.566774	40
41	3.863362	4.983438	6.034620	1.822515	3.267656	4.543541	41
42	3.833846	4.949183	5.994195	1.808374	3.251787	4.519901	42
43	3.804176	4.914537	5.953162	1.793953	3.235854	4.495821	43
44	3.774351	4.879475	5.911492	1.780837	3.219864	4.471271	44
45	3.744346	4.843970	5.869151	1.768404	3.203765	4.446219	45
46	3.714147	4.807993	5.826103	1.756585	3.187528	4.420630	46
47	3.683735	4.771513	5.782311	1.745789	3.171121	4.394466	47
48	3.653086	4.734498	5.737737	1.735444	3.154497	4.367689	48
49	3.622179	4.696912	5.692338	1.725933	3.137626	4.340259	49
50	3.590989	4.658717	5.646069	1.717149	3.120461	4.312131	50
51	3.559483	4.619872	5.598884	1.708991	3.102955	4.283259	51
52	3.527633	4.580334	5.550731	1.701365	3.085060	4.253595	52
53	3.495404	4.540056	5.501555	1.694181	3.066727	4.223087	53
54	3.462761	4.498988	5.451301	1.687359	3.047907	4.191680	54

TABLE XXXVIII.

LOGARITHMS OF COMMUTATION COLUMNS.   **6 PER CENT.**

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x.	AGE.
55	3.429664	4.457075	5.399907	1.681515	3.028548	4.159313	55
56	3.396059	4.414259	5.347307	1.675499	3.008563	4.125924	56
57	3.361903	4.370478	5.293431	1.670247	2.987909	4.091446	57
58	3.327131	4.325663	5.238204	1.664713	2.966491	4.055805	58
59	3.291693	4.279742	5.181546	1.659185	2.944254	4.018926	59
60	3.255522	4.232636	5.123370	1.653898	2.921121	3.980725	60
61	3.218540	4.184259	5.063583	1.648520	2.896990	3.941113	61
62	3.180664	4.134521	5.002088	1.642520	2.871763	3.899992	62
63	3.141817	4.083319	4.938775	1.636420	2.845358	3.857260	63
64	3.101889	4.030548	4.873531	1.629738	2.817649	3.812805	64
65	3.060777	3.976089	4.806230	1.622512	2.788518	3.766507	65
66	3.018357	3.919816	4.736739	1.614137	2.757825	3.718233	66
67	2.974512	3.861590	4.664913	1.605127	2.725452	3.667845	67
68	2.929081	3.801262	4.590597	1.594339	2.691218	3.615188	68
69	2.881936	3.738669	4.513618	1.582890	2.655003	3.560099	69
70	2.832869	3.673631	4.433794	1.569333	2.616566	3.502393	70
71	2.781717	3.605958	4.350923	1.554190	2.575753	3.441878	71
72	2.728255	3.535435	4.264789	1.536846	2.532327	3.378338	72
73	2.672264	3.461835	4.175154	1.517064	2.486064	3.311544	73
74	2.613499	3.384901	4.081758	1.495109	2.436721	3.241240	74
75	2.551646	3.304357	3.984319	1.469803	2.383964	3.167145	75
76	2.486434	3.219904	3.882525	1.441146	2.327531	3.088963	76
77	2.417535	3.131207	3.776031	1.409239	2.267099	3.006359	77
78	2.344540	3.037896	3.664459	1.373012	2.202244	2.918964	78
79	2.267069	2.939571	3.547390	1.332321	2.132595	2.826380	79
80	2.184671	2.835785	3.424354	1.286685	2.057706	2.728164	80
81	2.096849	2.726039	3.294823	1.235400	1.977085	2.623824	81
82	2.003086	2.609780	3.158200	1.178367	1.890228	2.512812	82
83	1.902729	2.486376	3.013801	1.114107	1.796482	2.394504	83
84	1.795213	2.355122	2.860833	1.042961	1.695322	2.268211	84
85	1.679719	2.215172	2.698362	0.963260	1.585934	2.133097	85
86	1.555526	2.065549	2.525272	0.874302	1.467654	1.988200	86
87	1.421846	1.905019	2.340214	0.776544	1.339774	1.832295	87
88	1.277419	1.731922	2.141537	0.666332	1.201070	1.663703	88
89	1.121609	1.544064	1.927300	0.562578	1.051167	1.480177	89
90	0.945968	1.337823	1.695365	0.436739	0.880698	1.277871	90
91	0.747932	1.111870	1.444333	0.277165	0.687025	1.055511	91
92	0.529795	0.865778	1.172614	0.095261	0.472947	0.812854	92
93	0.290008	0.597098	0.877313	$\bar{1}$.893090	0.237050	0.547505	93
94	0.024370	0.302043	0.554421	$\bar{1}$.664129	$\bar{1}$.975085	0.255700	94
95	$\bar{1}$.729482	$\bar{1}$.976326	0.198594	$\bar{1}$.403146	$\bar{1}$.683759	$\bar{1}$.933248	95
96	$\bar{1}$.403146	$\bar{1}$.613372	$\bar{1}$.801283	$\bar{1}$.125115	1.361304	$\bar{1}$.573725	96
97	$\bar{1}$.022452	$\bar{1}$.197391	$\bar{1}$.346881	$\bar{2}$.775298	$\bar{2}$.984027	1.161248	97
98	$\bar{2}$.599206	$\bar{2}$.717953	$\bar{2}$.811106	$\bar{2}$.397809	$\bar{2}$.565635	$\bar{2}$.686377	98
99	$\bar{2}$.096779	$\bar{2}$.096779	$\bar{2}$.096779	$\bar{2}$.071474	$\bar{2}$.071474	$\bar{2}$.071474	99

TABLE XXXIX.

COMMUTATION COLUMNS.   **7** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	50,834.9	697,841.8	9,179,521.1	307.8601	5,181.6666	97,313.2662	10
11	47,201.4	647,006.9	8,481,679.3	286.8318	4,873.8065	92,131.5996	11
12	43,826.7	599,805.5	7,834,672.4	266.8222	4,586.9747	87,257.7931	12
13	40,692.6	555,978.8	7,234,866.9	248.5908	4,320.1525	82,670.8184	13
14	37,781.9	515,286.2	6,678,888.1	231.9654	4,071.5617	78,350.6659	14
15	35,078.3	477,504.3	6,163,601.9	216.1127	3,839.5963	74,279.1042	15
16	32,567.3	442,426.0	5,686,097.6	201.3413	3,623.4836	70,439.5079	16
17	30,235.4	409,858.7	5,243,671.6	187.8736	3,422.1423	66,816.0243	17
18	28,069.5	379,623.3	4,833,812.9	175.3063	3,234.2687	63,393.8820	18
19	26,057.9	351,553.8	4,454,189.6	163.5792	3,058.9624	60,159.6133	19
20	24,189.6	325,495.9	4,102,635.8	152.8778	2,895.3832	57,100.6509	20
21	22,454.2	301,306.3	3,777,139.9	142.8764	2,742.5054	54,205.2677	21
22	20,837.6	278,852.1	3,475,833.6	133.5294	2,599.6290	51,462.7623	22
23	19,345.3	258,014.5	3,196,981.5	124.9910	2,466.0996	48,863.1333	23
24	17,954.7	238,669.2	2,938,967.0	116.9982	2,341.1086	46,397.0337	24
25	16,666.9	220,714.5	2,700,297.8	109.5163	2,224.1104	44,055.9251	25
26	15,463.5	204,047.6	2,479,583.3	102.8345	2,114.5941	41,831.8147	26
27	14,349.1	188,584.1	2,275,535.7	96.4078	2,011.7596	39,717.2206	27
28	13,313.9	174,235.0	2,086,951.6	90.5224	1,915.3518	37,705.4610	28
29	12,352.4	160,921.1	1,912,716.6	85.2573	1,824.8294	35,790.1092	29
30	11,459.0	148,568.72	1,751,795.48	80.1708	1,739.5721	33,965.2798	30
31	10,629.2	137,109.72	1,603,226.76	75.4997	1,659.4013	32,225.7077	31
32	9,858.32	126,480.52	1,466,117.04	71.2038	1,583.9016	30,566.3064	32
33	9,142.19	116,622.20	1,339,636.52	67.2472	1,512.6978	28,982.4048	33
34	8,476.86	107,480.01	1,223,014.32	63.5971	1,445.4506	27,469.7070	34
35	7,858.71	99,003.15	1,115,534.31	60.3119	1,381.8535	26,024.2564	35
36	7,284.27	91,144.44	1,016,531.16	57.1026	1,321.5416	24,642.4029	36
37	6,750.61	83,860.17	925,386.72	54.2079	1,264.4390	23,320.8613	37
38	6,254.78	77,109.56	841,526.55	51.5905	1,210.2311	22,056.4223	38
39	5,794.01	70,854.78	764,416.99	49.1504	1,158.6406	20,846.1912	39
40	5,365.81	65,060.77	693,562.21	46.9335	1,109.4902	19,687.5506	40
41	4,967.83	59,694.96	628,501.44	44.7964	1,062.5567	18,578.0604	41
42	4,598.04	54,727.13	568,806.48	42.9560	1,017.7603	17,515.5037	42
43	4,254.28	50,129.09	514,079.35	41.1647	974.8043	16,497.7434	43
44	3,934.80	45,874.81	463,950.26	39.5668	933.6396	15,522.9391	44
45	3,637.81	41,940.01	418,075.45	38.0908	894.0728	14,589.2995	45
46	3,361.73	38,302.20	376,135.44	36.7217	855.9820	13,695.2267	46
47	3,105.08	34,940.47	337,833.24	35.4854	819.2603	12,839.2447	47
48	2,866.47	31,835.39	302,892.77	34.3263	783.7749	12,019.9844	48
49	2,644.61	28,968.92	271,057.38	33.2688	749.4486	11,236.2095	49
50	2,438.33	26,324.31	242,088.46	32.2979	716.1798	10,486.7609	50
51	2,246.51	23,885.98	215,764.15	31.4007	683.8819	9,770.5811	51
52	2,068.15	21,639.47	191,878.17	30.5658	652.4812	9,086.6992	52
53	1,902.28	19,571.32	170,238.70	29.7834	621.9154	8,434.2180	53
54	1,748.05	17,669.04	150,667.38	29.0451	592.1320	7,812.3026	54

TABLE XXXIX.

COMMUTATION COLUMNS.   **7** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	1,604.65	15,920.99	132,998.34	28.3891	563.0869	7,220.1706	55
56	1,471.28	14,316.34	117,077.35	27.7369	534.6978	6,657.0837	56
57	1,347.29	12,845.06	102,761.01	27.1474	506.9609	6,122.3859	57
58	1,232.00	11,497.77	89,915.95	26.5532	479.8135	5,615.4250	58
59	1,124.85	10,265.77	78,418.18	25.9723	453.2603	5,135.6115	59
60	1,025.29	9,140.916	68,152.409	25.4183	427.2880	4,682.3512	60
61	932.797	8,115.626	59,011.493	24.8708	401.8697	4,255.0632	61
62	846.904	7,182.829	50,895.867	24.3003	376.9989	3,853.1935	62
63	767.199	6,335.925	43,713.038	23.7374	352.6986	3,476.1946	63
64	693.269	5,568.726	37,377.113	23.1566	328.9612	3,123.4960	64
65	624.758	4,875.457	31,808.387	22.5616	305.8046	2,794.5348	65
66	561.326	4,250.699	26,932.930	21.9239	283.2430	2,488.7302	66
67	502.680	3,689.373	22,682.231	21.2730	261.3191	2,205.4872	67
68	448.521	3,186.693	18,992.858	20.5572	240.0461	1,944.1681	68
69	398.621	2,738.172	15,806.165	19.8352	219.4889	1,704.1220	69
70	352.709	2,339.551	13,067.993	19.0459	199.6537	1,484.6331	70
71	310.588	1,986.842	10,728.442	18.2213	180.6078	1,284.9794	71
72	272.048	1,676.254	8,741.600	17.3443	162.3865	1,104.3716	72
73	236.906	1,404.206	7,065.346	16.4172	145.0422	941.9851	73
74	204.991	1,167.300	5,661.140	15.4620	128.6250	796.9429	74
75	176.118	962.309	4,493.840	14.4504	113.1630	668.3179	75
76	150.146	786.191	3,531.531	13.4013	98.71266	555.15498	76
77	126.922	636.045	2,745.340	12.3357	85.31136	456.44232	77
78	106.283	509.123	2,109.295	11.2423	72.97566	371.13096	78
79	88.0874	402.8396	1,600.1718	10.1412	61.73336	298.15530	79
80	72.1835	314.7522	1,197.3322	9.04428	51.59216	236.42194	80
81	58.4168	242.5687	882.5800	7.96179	42.54788	184.82978	81
82	46.6334	184.1519	640.0113	6.91672	34.58609	142.28190	82
83	36.6660	137.5185	455.8594	5.90966	27.66937	107.69581	83
84	28.3576	100.8525	318.3409	4.96979	21.75971	80.02644	84
85	21.5326	72.4949	217.4884	4.09788	16.78992	58.26673	85
86	16.0260	50.9623	144.9935	3.30768	12.69204	41.47681	86
87	11.6699	34.9363	94.0312	2.61630	9.38436	28.78477	87
88	8.29016	23.26642	59.09493	2.01094	6.76806	19.40041	88
89	5.73687	14.97626	35.82851	1.56879	4.75712	12.63235	89
90	3.79277	9.23939	20.85225	.16319	3.18833	7.87523	90
91	2.38145	5.44662	11.61286	.797990	2.025136	4.686905	91
92	1.42767	3.06517	6.16624	.520014	1.227146	2.661769	92
93	.814258	1.637496	3.101066	.323420	.707132	1.434623	93
94	.437568	.823238	1.463570	.189116	.383712	.727491	94
95	.219827	.385670	.640332	.102723	.194596	.343779	95
96	.102723	.165843	.254662	.053648	.091873	.149183	96
97	.042354	.063120	.088819	.023750	.038225	.057310	97
98	.015833	.020766	.025699	.009865	.014475	.019085	98
99	.004933	.004933	.004933	.004610	.004610	.004610	99

TABLE XXXIX.

LOGARITHMS OF COMMUTATION COLUMNS.   **7** PER CENT.

AGE.	λD_x.	λN_x.	λS_x.	λC_x.	λM_x.	λR_x.	AGE.
10	4.706162	5.843757	6.962820	2.488353	3.714470	4.988172	10
11	4.673955	5.810909	6.928482	2.457627	3.687868	4.964409	11
12	4.641739	5.778010	6.894021	2.426222	3.661526	4.940804	12
13	4.609516	5.745058	6.859431	2.395485	3.635499	4.917352	13
14	4.577284	5.712049	6.824704	2.365423	3.609761	4.894043	14
15	4.545038	5.678977	6.789834	2.334680	3.584286	4.870867	15
16	4.512782	5.645841	6.754814	2.303933	3.559126	4.847816	16
17	4.480516	5.612635	6.719636	2.273866	3.534298	4.824881	17
18	4.448235	5.579353	6.684290	2.243798	3.509776	4.802047	18
19	4.415939	5.545992	6.648769	2.213728	3.485574	4.779305	19
20	4.383628	5.512545	6.613063	2.184344	3.461706	4.756641	20
21	4.351298	5.479008	6.577163	2.154961	3.438147	4.734041	21
22	4.318847	5.445374	6.541059	2.125577	3.414911	4.711493	22
23	4.286575	5.411644	6.504740	2.096879	3.392011	4.688981	23
24	4.254179	5.377796	6.468195	2.068179	3.369422	4.666490	24
25	4.221856	5.343831	6.431412	2.039479	3.347156	4.644004	25
26	4.189308	5.309732	6.394379	2.012139	3.325227	4.621507	26
27	4.156823	5.275505	6.357084	1.984112	3.303576	4.598979	27
28	4.124305	5.241135	6.319512	1.956756	3.282249	4.576404	28
29	4.091750	5.206613	6.281651	1.930731	3.261222	4.553763	29
30	4.059148	5.171927	6.243484	1.904016	3.240442	4.531035	30
31	4.026501	5.137068	6.204995	1.877945	3.219951	4.508202	31
32	3.993803	5.102024	6.166169	1.852503	3.199728	4.485243	32
33	3.961050	5.066781	6.126987	1.827674	3.179752	4.462134	33
34	3.928235	5.031328	6.087431	1.803438	3.160004	4.438854	34
35	3.895351	4.995649	6.047483	1.780403	3.140462	4.415378	35
36	3.862386	4.959730	6.007120	1.756656	3.121081	4.391683	36
37	3.829343	4.923556	5.966323	1.734062	3.101898	4.367745	37
38	3.796212	4.887108	5.925068	1.712570	3.082868	4.343535	38
39	3.762979	4.850369	5.883330	1.691527	3.063949	4.319027	39
40	3.729635	4.813319	5.841085	1.671483	3.045123	4.294192	40
41	3.696167	4.775938	5.798306	1.651243	3.026352	4.269000	41
42	3.662573	4.738203	5.754964	1.633024	3.007645	4.243423	42
43	3.628826	4.700090	5.711030	1.614525	2.988917	4.217425	43
44	3.594923	4.661574	5.666471	1.597331	2.970179	4.190974	44
45	3.560840	4.622628	5.621254	1.580820	2.951373	4.164034	45
46	3.526563	4.583224	5.575344	1.564923	2.932465	4.136569	46
47	3.492073	4.543329	5.528702	1.550050	2.913422	4.108539	47
48	3.457347	4.502910	5.481289	1.535627	2.894191	4.079904	48
49	3.422362	4.461933	5.433061	1.522037	2.874742	4.050620	49
50	3.387093	4.420357	5.383974	1.509175	2.855022	4.020641	50
51	3.351509	4.378143	5.333979	1.496940	2.834981	3.989920	51
52	3.315582	4.335247	5.283026	1.485235	2.814568	3.958406	52
53	3.279275	4.291620	5.231059	1.473974	2.793731	3.926045	53
54	3.242554	4.247213	5.178019	1.463073	2.772419	3.892779	54

TABLE XXXIX.

LOGARITHMS OF COMMUTATION COLUMNS. **7 PER CENT.**

AGE.	$\lambda D_x.$	$\lambda N_x.$	$\lambda S_x.$	$\lambda C_x.$	$\lambda M_x.$	$\lambda R_x.$	AGE.
55	3.205379	4.201970	5.123846	1.453152	2.750575	3.858547	55
56	3.167695	4.155832	5.068473	1.443058	2.728108	3.823284	56
57	3.129462	4.108736	5.011828	1.433728	2.704975	3.786920	57
58	3.090612	4.060614	4.953837	1.424116	2.681073	3.749383	58
59	3.051096	4.011391	4.894417	1.414510	2.656348	3.710592	59
60	3.010847	3.960990	4.833481	1.405146	2.630721	3.670464	60
61	2.969787	3.909322	4.770936	1.395690	2.604085	3.628906	61
62	2.927834	3.856295	4.706683	1.385611	2.576340	3.585821	62
63	2.884908	3.801810	4.640611	1.375434	2.547404	3.541104	63
64	2.840902	3.745756	4.572605	1.364674	2.517145	3.494641	64
65	2.795712	3.688015	4.502541	1.353370	2.485444	3.446310	65
66	2.749215	3.628460	4.430284	1.340917	2.452159	3.395976	66
67	2.701292	3.566953	4.355685	1.327829	2.417171	3.343505	67
68	2.651783	3.503340	4.278591	1.312963	2.380295	3.288734	68
69	2.600560	3.437461	4.198826	1.297436	2.341413	3.231501	69
70	2.547416	3.369133	4.116209	1.279801	2.300277	3.171619	70
71	2.492185	3.298163	4.030537	1.260580	2.256737	3.108896	71
72	2.434645	3.224340	3.941591	1.239158	2.210550	3.043115	72
73	2.374576	3.147431	3.849134	1.215298	2.161494	2.974044	73
74	2.311734	3.067183	3.752904	1.189265	2.109326	2.901427	74
75	2.245803	2.983314	3.652618	1.159881	2.053705	2.824983	75
76	2.176513	2.895528	3.547963	1.127147	1.994373	2.744414	76
77	2.103536	2.803488	3.438596	1.091162	1.931007	2.659386	77
78	2.026462	2.706823	3.324137	1.050857	1.863178	2.569527	78
79	1.944914	2.605132	3.204166	1.006088	1.790520	2.474442	79
80	1.858438	2.497969	3.078215	0.956374	1.712584	2.373688	80
81	1.766538	2.384835	2.945754	0.901011	1.628878	2.266772	81
82	1.668697	2.265176	2.806188	0.839900	1.538901	2.153150	82
83	1.564263	2.138361	2.658830	0.771562	1.441999	2.032199	83
84	1.452669	2.003687	2.502892	0.696338	1.337653	1.903233	84
85	1.333096	1.860307	2.337436	0.612559	1.225049	1.765421	85
86	1.204825	1.707249	2.161349	0.519523	1.103531	1.617805	86
87	1.067067	1.543277	1.973272	0.417688	0.972405	1.459163	87
88	0.918563	1.366730	1.771550	0.303398	0.830464	1.287811	88
89	0.758675	1.175403	1.554229	0.195566	0.677344	1.101484	89
90	0.578956	0.965644	1.319153	0.065649	0.503563	0.896263	90
91	0.376842	0.736127	1.064939	$\overline{1}$.901997	0.306454	0.670886	91
92	0.154628	0.486455	0.790021	$\overline{1}$.716015	0.088896	0.425170	92
93	$\overline{1}$.910762	0.214181	0.491511	$\overline{1}$.509767	$\overline{1}$.849510	0.156738	93
94	$\overline{1}$.641046	1.915525	0.165413	$\overline{1}$.276727	$\overline{1}$.584005	1.861828	94
95	$\overline{1}$.342080	$\overline{1}$.586216	$\overline{1}$.806405	$\overline{1}$.011666	$\overline{1}$.289134	$\overline{1}$.536279	95
96	1.011666	$\overline{1}$.219697	$\overline{1}$.405964	$\overline{2}$.729557	$\overline{2}$.963188	1.173719	96
97	$\overline{2}$.626895	$\overline{2}$.800167	$\overline{2}$.948506	$\overline{2}$.375662	$\overline{2}$.582347	$\overline{2}$.758230	97
98	$\overline{2}$.199571	$\overline{2}$.317353	$\overline{2}$.409916	$\overline{3}$.994096	$\overline{2}$.160619	$\overline{2}$.280692	98
99	$\overline{3}$.693066	$\overline{3}$.693066	$\overline{3}$.693066	$\overline{3}$.663682	$\overline{3}$.663682	$\overline{3}$.663682	99

TABLE XL.

COMMUTATION COLUMNS.　**8** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	46,319.3	571,113.6	6,833,398.9	277.916	4,014.670	64,935.891	10
11	42,610.4	524,794.3	6,262,285.3	256.536	3,736.754	60,921.221	11
12	39,197.6	482,183.9	5,737,491.0	236.430	3,480.218	57,184.467	12
13	36,057.5	442,986.3	5,255,307.1	218.235	3,243.788	53,704.249	13
14	33,168.4	406,928.8	4,812,320.8	201.755	3,025.553	50,460.461	14
15	30,509.8	373,760.4	4,405,392.0	186.226	2,823.798	47,434.908	15
16	28,063.5	343,250.6	4,031,631.6	171.891	2,637.572	44,611.110	16
17	25,812.9	315,187.1	3,688,381.0	158.908	2,465.681	41,973.538	17
18	23,741.9	289,374.2	3,373,193.9	146.906	2,306.773	39,507.857	18
19	21,836.4	265,632.3	3,083,819.7	135.809	2,159.867	37,201.084	19
20	20,083.0	243,795.9	2,818,187.4	125.749	2,024.058	35,041.217	20
21	18,469.6	223,712.9	2,574,391.5	116.434	1,898.309	33,017.159	21
22	16,985.1	205,243.3	2,350,678.6	107.810	1,781.875	31,118.850	22
23	15,619.1	188,258.2	2,145,435.3	99.9814	1,674.0644	29,336.9753	23
24	14,362.2	172,639.1	1,957,177.1	92.7214	1,574.0830	27,662.9109	24
25	13,205.6	158,276.9	1,784,538.0	85.9883	1,481.3616	26,088.8279	25
26	12,141.4	145,071.3	1,626,261.1	79.9944	1,395.3733	24,607.4663	26
27	11,162.1	132,929.9	1,481,189.8	74.3007	1,315.3789	23,212.0930	27
28	10,260.9	121,767.8	1,348,259.9	69.1189	1,241.0782	21,896.7141	28
29	9,431.72	111,506.91	1,226,492.13	64.4959	1,171.9593	20,655.6359	29
30	8,668.58	102,075.19	1,114,985.22	60.0865	1,107.4634	19,483.6766	30
31	7,966.40	93,406.61	1,012,910.03	56.0616	1,047.3769	18,376.2132	31
32	7,320.22	85,440.21	919,503.42	52.3823	991.3153	17,328.8363	32
33	6,725.60	78,119.99	834,063.21	49.0134	938.9330	16,337.5210	33
34	6,178.39	71,394.39	755,943.22	45.9239	889.9196	15,398.5880	34
35	5,674.82	65,216.00	684,548.83	43.1483	843.9957	14,508.6684	35
36	5,211.31	59,541.18	619,332.83	40.4740	800.8474	13,664.6727	36
37	4,784.80	54,329.87	559,791.65	38.0666	760.3734	12,863.8253	37
38	4,392.31	49,545.07	505,461.78	35.8931	722.3068	12,103.4519	38
39	4,031.07	45,152.76	455,916.71	33.8788	686.4137	11,381.1451	39
40	3,698.59	41,121.69	410.763.95	32.0512	652.5349	10,694.7314	40
41	3,392.56	37,423.10	369,642.26	30.3084	620.4837	10,042.1965	41
42	3,110.96	34,030.54	332,219.16	28.7942	590.1753	9,421.7128	42
43	2,851.72	30,919.58	298,188.62	27.3380	561.3811	8,831.5375	43
44	2,613.15	28,067.86	267,269.04	26.0335	534.0431	8,270.1564	44
45	2,393.54	25,454.71	239,201.18	24.8303	508.0096	7,736.1133	45
46	2,191.41	23,061.17	213,746.47	23.7162	483.1793	7,228.1037	46
47	2,005.37	20,869.76	190,685.30	22.7055	459.4631	6,744.9244	47
48	1,834.12	18,864.39	169,815.54	21.7604	436.7576	6,285.4613	48
49	1,676.50	17,030.27	150,951.15	20.8948	414.9972	5,848.7037	49
50	1,531.42	15,353.77	133,920.88	20.0972	394.1024	5,433.7065	50
51	1,397.88	13,822.35	118,567.11	19.3580	374.0052	5,039.6041	51
52	1,274.98	12,424.47	104,744.76	18.6688	354.6472	4,665.5989	52
53	1,161.87	11,149.49	92,320.29	18.0225	335.9784	4,310.9517	53
54	1,057.78	9,987.62	81,170.80	17.4130	317.9559	3,974.9733	54

TABLE XL.

COMMUTATION COLUMNS. **8** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x	M_x.	R_x.	AGE.
55	962.011	8,929.843	71,183.180	16.8622	300.5429	3,657.0174	55
56	873.891	7,967.832	62,253.337	16.3222	283.6807	3,356.4745	56
57	792.835	7,093.941	54,285.505	15.8274	267.3585	3,072.7938	57
58	718.279	6,301.106	47,191.564	15.3376	251.5311	2,805.4353	58
59	649.736	5,582.827	40,890.458	14.8632	236.1935	2,553.9042	59
60	586.745	4,933.091	35,307.631	14.4114	221.3303	2,317.7107	60
61	528.870	4,346.346	30,374.540	13.9705	206.9189	2,096.3804	61
62	475.724	3,817.476	26,028.194	13.5236	192.9484	1,889.4615	62
63	426.962	3,341.752	22,210.718	13.0881	179.4248	1,696.5131	63
64	382.247	2,914.790	18,868.966	12.6496	166.3367	1,517.0883	64
65	341.283	2,532.543	15,954.176	12.2104	153.6871	1,350.7516	65
66	303.792	2,191.260	13,421.633	11.7554	141.4767	1,197.0645	66
67	269.534	1,887.468	11,230.373	11.3008	129.7213	1,055.5878	67
68	238.268	1,617.934	9,342.905	10.8195	118.4205	925.8665	68
69	209.798	1,379.666	7,724.971	10.3428	107.6010	807.4460	69
70	183.916	1,169.868	6,345.305	9.83926	97.25822	699.84498	70
71	160.452	985.952	5,175.437	9.32613	87.41896	602.58676	71
72	139.241	825.500	4,189.485	8.79508	78.09283	515.16780	72
73	120.132	686.259	3,363.985	8.24783	69.29775	437.07497	73
74	102.985	566.127	2,677.726	7.69603	61.04992	367.77722	74
75	87.6605	463.1417	2,111.5992	7.12596	53.35389	306.72730	75
76	74.0413	375.4812	1,648.4575	6.54739	46.22793	253.37341	76
77	62.0095	301.4399	1,272.9763	5.97096	39.68054	207.14548	77
78	51.4451	239.4304	971.5364	5.39136	33.70958	167.46494	78
79	42.2430	187.9853	732.1060	4.81826	28.31822	133.75536	79
80	34.2957	145.7423	544.1207	4.25731	23.49996	105.43714	80
81	27.4979	111.4466	398.3784	3.71307	19.24265	81.93718	81
82	21.7480	83.9487	286.9318	3.19582	15.52958	62.69453	82
83	16.9412	62.2007	202.9831	2.70523	12.33376	47.16495	83
84	12.9811	45.2595	140.7824	2.25393	9.62853	34.83119	84
85	9.76558	32.27839	95.52286	1.84129	7.37460	25.20266	85
86	7.20090	22.51281	63.24447	1.47247	5.53331	17.82806	86
87	5.19504	15.31191	40.73166	1.15391	4.06084	12.29475	87
88	3.65633	10.11687	25.41975	.878699	2.906926	8.233909	88
89	2.50679	6.46054	15.30288	.679154	2.028227	5.326983	89
90	1.64194	3.95375	8.84234	.498897	1.349073	3.298756	90
91	1.02142	2.31181	4.88859	.339094	.850176	1.949683	91
92	.606667	1.290385	2.57678	.218926	.511082	1.099507	92
93	.342803	.683718	1.286398	.134899	.292156	.588425	93
94	.182511	.340915	.602680	.078150	.157257	.296269	94
95	.090841	.158404	.261765	.042056	.079107	.139012	95
96	.042056	.067563	.103361	.021761	.037051	.059905	96
97	.017180	.025507	.035798	.009544	.015290	.022854	97
98	.006363	.008327	.010291	.003928	.005746	.007564	98
99	.001964	.001964	.001964	.001818	.001818	.001818	99

TABLE XLI.

COMMUTATION COLUMNS.   **9** PER CENT.

AGE.	D_x	N_x.	S_{x}.	C_x.	M_x.	R_x.	AGE.
10	42,241.1	473,006.5	5,184,561.6	251.121	3,185.523	44,923.415	10
11	38,502.2	430,765.4	4,711,555.1	229.675	2,934.402	41,737.892	11
12	35,093.4	392,263.2	4,280,789.7	209.733	2,704.727	38,803.490	12
13	31,986.0	357,169.8	3,888,526.5	191.817	2,494.994	36,098.763	13
14	29,153.2	325,183.8	3,531,356.7	175.704	2,303.177	33,603.769	14
15	26,570.4	296,030.6	3,206,172.9	160.693	2,127.473	31,300.592	15
16	24,215.8	269,460.2	2,910,142.3	146.963	1,966.780	29,173.119	16
17	22,069.4	245,244.4	2,640,682.1	134.616	1,819.817	27,206.339	17
18	20,112.5	223,175.0	2,395,437.7	123.306	1,685.201	25,386.522	18
19	18,328.6	203,062.5	2,172,262.7	112.947	1,561.895	23,701.321	19
20	16,702.2	184,733.9	1,969,200.2	103.621	1,448.948	22,139.426	20
21	15,219.5	168,031.7	1,784,466.3	95.0650	1,345.3274	20,690.4780	21
22	13,867.8	152,812.2	1,616,434.6	87.2156	1,250.2624	19,345.1506	22
23	12,635.5	138,944.4	1,463,622.4	80.1407	1,163.0468	18,094.8882	23
24	11,512.1	126,308.9	1,324,678.0	73.6396	1,082.9061	16,931.8414	24
25	10,487.9	114,796.8	1,198,369.1	67.6656	1,009.2665	15,848.9353	25
26	9,554.26	104,308.94	1,083,572.28	62.3714	941.6009	14,839.6688	26
27	8,703.02	94,754.68	979,263.34	57.4006	879.2295	13,898.0679	27
28	7,927.00	86,051.66	884,508.66	52.9075	821.8289	13,018.8384	28
29	7,219.58	78,124.66	798,457.00	48.9159	768.9214	12,197.0095	29
30	6,574.55	70,905.08	720,332.34	45.1535	720.0055	11,428.0881	30
31	5,986.56	64,330.53	649,427.26	41.7425	674.8520	10,708.0826	31
32	5,450.50	58,343.97	585,096.73	38.6450	633.1095	10,033.2306	32
33	4,961.82	52,893.47	526,752.76	35.8279	594.4645	9,400.1211	33
34	4,516.29	47,931.65	473,859.29	33.2615	558.6366	8,805.6566	34
35	4,110.13	43,415.36	425,927.64	30.9646	525.3751	8,247.0200	35
36	3,739.80	39,305.23	382,512.28	28.7789	494.4105	7,721.6449	36
37	3,402.23	35,565.43	343,207.05	26.8188	465.6316	7,227.2344	37
38	3,094.49	32,163.20	307,641.62	25.0555	438.8128	6,761.6028	38
39	2,813.93	29,068.71	275,478.42	23.4325	413.7573	6,322.7900	39
40	2,558.15	26,254.78	246,409.71	21.9650	390.3248	5,909.0327	40
41	2,324.96	23,696.63	220,154.93	20.5801	368.3598	5,518.7079	41
42	2,112.41	21,371.67	196,458.30	19.3726	347.7797	5,150.3481	42
43	1,918.62	19,259.26	175,086.63	18.2241	328.4071	4,802.5684	43
44	1,741.98	17,340.64	155,827.37	17.1952	310.1830	4,474.1613	44
45	1,580.95	15,598.66	138,486.73	16.2501	292.9878	4,163.9783	45
46	1,434.16	14,017.71	122,888.07	15.3786	276.7377	3,870.9905	46
47	1,300.37	12,583.55	108,870.36	14.5881	261.3591	3,594.2528	47
48	1,178.41	11,283.18	96,286.81	13.8527	246.7710	3,332.8937	48
49	1,067.26	10,104.77	85,003.63	13.1796	232.9183	3,086.1227	49
50	965.955	9,037.511	74,898.859	12.5602	219.7387	2,853.2044	50
51	873.636	8,071.556	65,861.348	11.9872	207.1785	2,633.4657	51
52	789.514	7,197.920	57,789.792	11.4544	195.1913	2,426.2872	52
53	712.871	6,408.406	50,591.872	10.9564	183.7369	2,231.0959	53
54	643.053	5,695.535	44,183.466	10.4888	172.7805	2,047.3590	54

TABLE XLI.

COMMUTATION COLUMNS.   **9** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
55	579.469	5,052.482	38,487.931	10.06385	162.2917	1,874.5785	55
56	521.559	4,473.013	33,435.449	9.65214	152.22788	1,712.28676	56
57	468.843	3,951.454	28,962.436	9.27363	142.57574	1,560.05888	57
58	420.857	3,482.611	25,010.982	8.90421	133.30211	1,417.48314	58
59	377.204	3,061.754	21,528.371	8.54962	124.39790	1,284.18103	59
60	337.508	2,684.550	18,466.617	8.21372	115.84828	1,159.78313	60
61	301.427	2,347.042	15,782.067	7.88935	107.63456	1,043.93485	61
62	268.649	2,045.615	13,435.025	7.56693	99.74521	936.30029	62
63	238.901	1,776.966	11,389.410	7.25604	92.17828	836.55508	63
64	211.918	1,538.065	9,612.444	6.94860	84.92224	744.37680	64
65	187.472	1,326.147	8,074.379	6.64584	77.97364	659.45456	65
66	165.347	1,138.675	6,748.232	6.33950	71.32780	581.48092	66
67	145.355	973.328	5,609.557	6.03843	64.98830	510.15312	67
68	127.315	827.973	4,636.229	5.72817	58.94987	445.16482	68
69	111.074	700.658	3,808.256	5.42557	53.22170	386.21495	69
70	96.4773	589.5838	3,107.5975	5.11408	47.79613	332.99325	70
71	83.3973	493.1065	2,518.0137	4.80291	42.68205	285.19712	71
72	71.7082	409.7092	2,024.9072	4.48787	37.87914	242.51507	72
73	61.2997	338.0010	1,615.1980	4.17001	33.39127	204.63593	73
74	52.0681	276.7013	1,277.1970	3.85533	29.22126	171.24466	74
75	43.9136	224.6332	1,000.4957	3.53700	25.36593	142.02340	75
76	36.7507	180.7196	775.8625	3.22001	21.82893	116.65747	76
77	30.4963	143.9689	595.1429	2.90958	18.60892	94.82854	77
78	25.0686	113.4726	451.1740	2.60305	15.69934	76.21962	78
79	20.3957	88.4040	337.7014	2.30500	13.09629	60.52028	79
80	16.4067	68.0083	249.2974	2.01796	10.79129	47.42399	80
81	13.0340	51.6016	181.2891	1.74385	8.77333	36.63270	81
82	10.2140	38.5676	129.6875	1.48715	7.02948	27.85937	82
83	7.88346	28.35357	91.11993	1.24731	5.54233	20.82989	83
84	5.98522	20.47011	62.76636	1.02969	4.29502	15.28756	84
85	4.46134	14.48489	42.29625	.833461	3.265334	10.992535	85
86	3.25950	10.02355	27.81136	.660399	2.431873	7.727201	86
87	2.32997	6.76405	17.78781	.512777	1.771474	5.295328	87
88	1.62481	4.43408	11.02376	.386898	1.258697	3.523854	88
89	1.10376	2.80927	6.58968	.296293	.871799	2.265157	89
90	.716326	1.705505	3.780411	.215656	.575506	1.393358	90
91	.441525	.989179	2.074906	.145234	.359850	.817852	91
92	.259835	.547654	1.085727	.092906	.214616	.458002	92
93	.145475	.287819	.538073	.056722	.121710	.243386	93
94	.076742	.142344	.250254	.032559	.064988	.121676	94
95	.037846	.065602	.107910	.017361	.032429	.056688	95
96	.017361	.027756	.042308	.008900	.015068	.024259	96
97	.007027	.010395	.014552	.003868	.006168	.009191	97
98	.002579	.003368	.004157	.001577	.002300	.003023	98
99	.000789	.000789	.000789	.000723	.000723	.000723	99

TABLE XLII.

COMMUTATION COLUMNS.   **10** PER CENT.

AGE.	D_x.	N_x.	S_x.	C_x.	M_x.	R_x.	AGE.
10	38,554.3	395,760.5	4,000,286.2	227.120	2,576.107	32,098.169	10
11	34,822.3	357,206.2	3,604,525.7	205.836	2,348.987	29,522.062	11
12	31,450.8	322,383.9	3,247,319.5	186.254	2,143.151	27,173.075	12
13	28,405.3	290,933.1	2,924,935.6	168.795	1,956.897	25,029.924	13
14	25,654.2	262,527.8	2,634,002.5	153.211	1,788.102	23,073.027	14
15	23,168.9	236,873.6	2,371,474.7	138.847	1,634.891	21,284.925	15
16	20,923.7	213,704.7	2,134,601.1	125.829	1,496.044	19,650.034	16
17	18,895.8	192,781.0	1,920.896.4	114.210	1,370.215	18,153.990	17
18	17,063.8	173,885.2	1,728,115.4	103.664	1,256.005	16,783.775	18
19	15,408.8	156,821.4	1,554,230.2	94.0914	1,152.3412	15,527.7698	19
20	13,913.9	141,412.6	1,397,408.8	85.5376	1,058:2498	14,375.4286	20
21	12,563.5	127,498.7	1,255,996.2	77.7615	972.7122	13,317.1788	21
22	11,343.6	114,935.2	1,128,497.5	70.6923	894.9507	12,344.4666	22
23	10,241.7	103,591.6	1,013,562.3	64.3673	824.2584	11,449.5159	23
24	9,246.26	93,349.9	909,970.7	58.6080	759.8911	10,625.2575	24
25	8,347.07	84,103.61	816,620.82	53.3639	701.2831	9,865.3664	25
26	7,534.87	75,756.54	732,517.21	48.7414	647.9192	9,164.0833	26
27	6,801.16	68,221.67	656,760.67	44.4491	599.1778	8,516.1641	27
28	6,138.41	61,420.51	588,539.00	40.5974	554.7287	7,916.9863	28
29	5,539.77	55,282.10	527,118.49	37.1933	514.1313	7,362.2576	29
30	4,998.96	49,742.33	471,836.39	34.0205	476.9380	6,848.1263	30
31	4,510.50	44,743.37	422,094.06	31.1645	442.9175	6,371.1883	31
32	4,069.28	40,232.87	377,350.69	28.5897	411.7530	5,928.2708	32
33	3,670.76	36,163.59	337,117.82	26.2646	383.1633	5,516.5178	33
34	3,310.79	32,492.83	300,954.23	24.1616	356.8987	5,133.3545	34
35	2,985.64	29,182.04	268,461.40	22.2886	332.7371	4,776.4558	35
36	2,691.94	26,196.40	239,279.36	20.5270	310.4485	4,443.7187	36
37	2,426.69	23,504.46	213,082.96	18.9550	289.9215	4,133.2702	37
38	2,187.13	21,077.77	189,578.50	17.5478	270.9665	3,843.3487	38
39	1,970.75	18,890.64	168,500.73	16.2619	253.4187	3,572.3822	39
40	1,775.33	16,919.89	149,610.09	15.1049	237.1568	3,318.9635	40
41	1,598.83	15,144.56	132,690.20	14.0239	222.0519	3,081.8067	41
42	1,439.46	13,545.73	117,545.64	13.0810	208.0280	2,859.7548	42
43	1,295.52	12,106.27	103,999.91	12.1936	194.9470	2,651.7268	43
44	1,165.55	10,810.75	91,893.64	11.4007	182.7534	2,456.7798	44
45	1,048.19	9,645.20	81,082.89	10.6761	171.3527	2,274.0264	45
46	942.224	8,597.01	71,437.69	10.0116	160.6766	2,102.6737	46
47	846.555	7,654.785	62,840.682	9.41070	150.66503	1,941.99711	47
48	760.185	6,808.230	55,185.897	8.85503	141.25433	1,791.33208	48
49	682.221	6,048.045	48,377.667	8.34818	132.39930	1,650.07775	49
50	611.854	5,365.824	42,329.622	7.88353	124.05112	1,517.67845	50
51	548.346	4,753.970	36,963.798	7.45549	116.16759	1,393.62733	51
52	491.041	4,205.624	32,209.828	7.05933	108.71210	1,277.45974	52
53	439.342	3,714.583	28,004.204	6.69103	101.65277	1,168.74764	53
54	392.711	3,275.241	24,289.621	6.34722	94.96174	1,067.09487	54

TABLE XLII.

COMMUTATION COLUMNS.   **10** PER CENT.

AGE.	$D_x.$	$N_x.$	$S_x.$	$C_x.$	$M_x.$	$R_x.$	AGE.
55	350.662	2,882.531	21,014.380	6.03467	88.61452	972.13313	55
56	312.750	2,531.869	18,131.849	5.73523	82.57985	883.51861	56
57	278.583	2,219.119	15,599.980	5.46023	76.84462	800.93876	57
58	247.796	1,940.536	13,380.861	5.19506	71.38439	724.09414	58
59	220.075	1,692.740	11,440.325	4.94283	66.18933	652.70975	59
60	195.125	1,472.664	9,747.585	4.70546	61.24650	586.52042	60
61	172.681	1,277.539	8,274.921	4.47855	56.54104	525.27392	61
62	152.504	1,104.858	6,997.382	4.25647	52.06249	468.73288	62
63	134.384	952.354	5,892.524	4.04449	47.80602	416.67039	63
64	118.122	817.970	4,940.170	3.83791	43.76153	368.86437	64
65	103.546	699.848	4,122.200	3.63732	39.92362	325.10284	65
66	90.4955	596.3028	3,422.3523	3.43811	36.28630	285.17922	66
67	78.8306	505.8073	2,826.0495	3.24507	32.84819	248.89292	67
68	68.4191	426.9757	2,320.2422	3.05034	29.60312	216.04473	68
69	59.1488	358.5566	1,893.2665	2.86294	26.55278	186.44161	69
70	50.9087	299.4078	1,534.7099	2.67404	23.68984	159.88883	70
71	43.6066	248.4991	1,235.3021	2.48851	21.01580	136.19899	71
72	37.1539	204.8925	986.8030	2.30414	18.52729	115.18319	72
73	31.4721	167.7386	781.9105	2.12148	16.22315	96.65590	73
74	26.4895	136.2665	614.1719	1.94356	14.10167	80.43275	74
75	22.1378	109.7770	477.9054	1.76687	12.15811	66.33108	75
76	18.3585	87.6392	368.1284	1.59390	10.39124	54.17297	76
77	15.0956	69.2807	280.4892	1.42714	8.79734	43.78173	77
78	12.2961	54.1851	211.2085	1.26518	7.37020	34.98439	78
79	9.91311	41.88903	157.02340	1.11014	6.10502	27.61419	79
80	7.90178	31.97592	115.13437	.963058	4.994877	21.509173	80
81	6.22038	24.07414	83.15845	.824671	4.031819	16.514296	81
82	4.83022	17.85376	59.08431	.696884	3.207148	12.482477	82
83	3.69422	13.02354	41.23055	.579181	2.510264	9.275329	83
84	2.77920	9.32932	28.20701	.473785	1.931083	6.765065	84
85	2.05276	6.55012	18.87769	.380009	1.457298	4.833982	85
86	1.48614	4.49736	12.32757	.298365	1.077289	3.376684	86
87	1.05267	3.01122	7.83021	.229564	.778924	2.299395	87
88	.727410	1.958552	4.818985	.171635	.549360	1.520471	88
89	.489646	1.231142	2.860433	.130246	.377725	.971111	89
90	.314886	.741496	1.629291	.093937	.247479	.593386	90
91	.192323	.426610	.887795	.062687	.153542	.345907	91
92	.112152	.234287	.461185	.039736	.090855	.192365	92
93	.062221	.122135	.226898	.024040	.051119	.101510	93
94	.032524	.059914	.104763	.013674	.027079	.050391	94
95	.015894	.027390	.044849	.007226	.013405	.023312	95
96	.007225	.011496	.017459	.003670	.006179	.009907	96
97	.002898	.004271	.005963	.001580	.002509	.003728	97
98	.001054	.001373	.001692	.000639	.000929	.001219	98
99	.000319	.000319	.000319	.000290	.000290	.000290	99

TABLE XLIII.

COMMON LOGARITHMS FOR SPECIAL FORMULAS.

Value of $\lambda\,(vp_x)$, of μ_x, $\lambda\mu_x$, v, δ, and $\lambda\delta$.

| AGE. x. | $\lambda\,(vp_x)$. | | | | | | μ_x. | $\lambda\mu_x$. | AGE. x. |
	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.			
10	1.984341	1.982236	1.980143	1.978061	1.975988	1.971872	0.006493	3.81245	10
11	.984329	.982227	.980134	.978051	.975977	.971861	.006513	.81378	11
12	.984325	.982221	.980128	.978044	.975972	.971855	.006530	.81491	12
13	.984313	.982211	.980118	.978036	.975963	.971846	.006547	.81604	13
14	.984302	.982198	.980105	.978022	.975949	.971832	.006572	.81770	14
15	1.984289	1.982186	1.980094	1.978010	1.975937	1.971821	0.006600	3.81954	15
16	.984282	.982178	.980084	.978002	.975929	.971812	.006624	.82112	16
17	.984265	.982163	.980070	.977987	.975914	.971797	.006653	.82302	17
18	.984250	.982147	.980055	.977971	.975898	.971783	.006687	.82523	18
19	.984236	.982133	.980039	.977957	.975884	.971767	.006721	.82743	19
20	1.984217	1.982113	1.980020	1.977937	1.975864	1.971747	0.006762	3.83008	20
21	.984195	.982092	.980000	.977916	.975843	.971727	.006807	.83296	21
22	.984175	.982072	.979978	.977896	.975823	.971706	.006854	.83594	22
23	.984150	.982048	.979955	.977872	.975799	.971682	.006906	.83923	23
24	.984125	.982020	.979928	.977845	.975772	.971655	.006965	.84292	24
25	1.984097	1.981995	1.979901	1.977818	1.975745	1.971630	0.007027	3.84677	25
26	.984062	.981959	.979866	.977783	.975710	.971593	.007098	.85114	26
27	.984028	.981925	.979833	.977750	.975677	.971560	.007176	.85588	27
28	.983993	.981888	.979795	.977713	.975639	.971522	.007258	.86082	28
29	.983943	.981841	.979748	.977664	.975592	.971476	.007354	.86652	29
30	1.983901	1.981797	1.979704	1.977621	1.975548	1.971431	0.007460	3.87274	30
31	.983847	.981746	.979652	.977570	.975496	.971380	.007569	.87904	31
32	.983795	.981691	.979598	.977514	.975442	.971325	.007692	.88604	32
33	.983730	.981627	.979535	.977452	.975379	.971263	.007829	.89371	33
34	.983664	.981560	.979466	.977384	.975311	.971194	.007978	.90189	34
35	1.983580	1.981478	1.979386	1.977303	1.975229	1.971113	0.008148	3.91105	35
36	.983504	.981401	.979307	.977224	.975152	.971035	.008330	.92065	36
37	.983416	.981313	.979220	.977137	.975064	.970947	.008524	.93064	37
38	.983313	.981209	.979117	.977034	.974960	.970844	.008744	.94171	38
39	.983203	.981100	.979006	.976923	.974851	.970734	.008987	.95361	39
40	1.983078	1.980976	1.978883	1.976800	1.974727	1.970611	0.009254	3.96633	40
41	.982953	.980849	.978757	.976674	.974600	.970484	.009544	.97973	41
42	.982800	.980696	.978602	.976520	.974447	.970330	.009866	.99414	42
43	.982643	.980541	.978448	.976364	.974292	.970175	.010221	2.00949	43
44	.982463	.980360	.978268	.976185	.974112	.969995	.010606	.02555	44
45	1.982272	1.980167	1.978073	1.975991	1.973917	1.969801	0.011035	2.04277	45
46	.982055	.979954	.977861	.975777	.973705	.969588	.011504	.06085	46
47	.981821	.979716	.977624	.975541	.973468	.969351	.012021	.07994	47
48	.981561	.979459	.977365	.975282	.973209	.969093	.012589	.09999	48
49	.981279	.979175	.977082	.975000	.972926	.968810	.013213	.12100	49
50	1.980961	1.978859	1.976767	1.974683	1.972611	1.968494	0.013901	2.14305	50
51	.980619	.978516	.976422	.974340	.972266	.968150	.014658	.16607	51
52	.980240	.978137	.976044	.973961	.971888	.967771	.015488	.19000	52
53	.979827	.977722	.975630	.973546	.971474	.967357	.016402	.21490	53
54	.979370	.977269	.975175	.973093	.971020	.966903	.017402	.24060	54

FORMULA, $vp_x = \dfrac{vl_{x+1}}{l_x} = \dfrac{D_{x+1}}{D_x}$. $\qquad \mu_x = -\dfrac{dl_x}{l_x\,dx}$.

TABLE XLIII.
COMMON LOGARITHMS FOR SPECIAL FORMULAS.

AGE. x.	$\lambda\,(vp_x)$.						μ_x.	$\lambda\mu_x$.	AGE. x.
	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	6 Per Cent.			
55	$\bar{1}$.978863	$\bar{1}$.976759	$\bar{1}$.974667	$\bar{1}$.972584	$\bar{1}$.970510	$\bar{1}$.966395	0.018508	$\bar{2}$.26736	55
56	.978314	.976210	.974117	.972033	.969961	.965844	.019725	.29502	56
57	.977696	.975594	.973500	.971418	.969345	.965228	.021064	.32354	57
58	.977030	.974927	.972835	.970752	.968678	.964562	.022541	.35297	58
59	.976299	.974195	.972102	.970019	.967946	.963829	.024151	.38294	59
60	$\bar{1}$.975486	$\bar{1}$.973384	$\bar{1}$.971290	$\bar{1}$.969207	$\bar{1}$.967135	$\bar{1}$.963018	0.025921	$\bar{2}$.41365	60
61	.974593	.972489	.970397	.968314	.966241	.962124	.027883	.44534	61
62	.973621	.971518	.969425	.967342	.965268	.961153	.030027	.47751	62
63	.972541	.970437	.968344	.966261	.964189	.960072	.032385	.51034	63
64	.971356	.969254	.967161	.965078	.963005	.958888	.034988	.54392	64
65	$\bar{1}$.970049	$\bar{1}$.967946	$\bar{1}$.965853	$\bar{1}$.963770	$\bar{1}$.961696	$\bar{1}$.957580	0.037853	$\bar{2}$.57810	65
66	.968624	.966521	.964427	.962345	.960272	.956155	.040996	.61274	66
67	.967037	.964934	.962842	.960758	.958686	.954569	.044457	.64794	67
68	.965325	.963221	.961128	.959045	.956971	.952855	.048249	.68349	68
69	.963401	.961299	.959205	.957122	.955050	.950933	.052427	.71956	69
70	$\bar{1}$.961316	$\bar{1}$.959212	$\bar{1}$.957120	$\bar{1}$.955037	$\bar{1}$.952963	$\bar{1}$.948848	0.057039	$\bar{2}$.75617	70
71	.959006	.956904	.954811	.952728	.950656	.946538	.062089	.79301	71
72	.956478	.954375	.952281	.950199	.948125	.944009	.067652	.83028	72
73	.953704	.951600	.949508	.947425	.945352	.941235	.073746	.86774	73
74	.950616	.948513	.946420	.944336	.942264	.938147	.080484	.90571	74
75	$\bar{1}$.947257	$\bar{1}$.945153	$\bar{1}$.943060	$\bar{1}$.940978	$\bar{1}$.938904	$\bar{1}$.934788	0.087902	$\bar{2}$.94400	75
76	.943570	.941467	.939374	.937291	.935218	.931101	.095996	.98225	76
77	.939473	.937370	.935277	.933193	.931121	.927005	.104940	1.02094	77
78	.934997	.932894	.930801	.928719	.926645	.922529	.114801	.05995	78
79	.930071	.927968	.925875	.923792	.921719	.917602	.125606	.09901	79
80	$\bar{1}$.924647	$\bar{1}$.922544	$\bar{1}$.920451	$\bar{1}$.918368	$\bar{1}$.916295	$\bar{1}$.912178	0.137506	$\bar{1}$.13832	80
81	.918706	.916602	.914509	.912426	.910354	.906237	.150570	.17774	81
82	.912111	.910009	.907916	.905833	.903759	.899643	.164978	.21743	82
83	.904953	.902850	.900757	.898674	.896601	.892484	.180795	.25719	83
84	.896974	.894870	.892777	.890694	.888622	.884506	.198181	.29706	84
85	$\bar{1}$.888276	$\bar{1}$.886173	$\bar{1}$.884080	$\bar{1}$.881997	$\bar{1}$.879923	$\bar{1}$.875807	0.217377	$\bar{1}$.33721	85
86	.878789	.876686	.874593	.872510	.870437	.866320	.238266	.37706	86
87	.868041	.865938	.863845	.861762	.859690	.855573	.261501	.41747	87
88	.856659	.854556	.852462	.850380	.848306	.844190	.286671	.45738	88
89	.836828	.834725	.832633	.830549	.828476	.824359	.321451	.50711	89
90	$\bar{1}$.814433	$\bar{1}$.812329	$\bar{1}$.810236	$\bar{1}$.808154	$\bar{1}$.806081	$\bar{1}$.801964	0.371233	$\bar{1}$.56965	90
91	.794331	.792229	.790136	.788052	.785980	.781863	.421033	.62432	91
92	.772681	.770578	.768484	.766402	.764328	.760213	.468238	.67047	92
93	.746831	.744727	.742635	.740552	.738479	.734362	.522329	.71794	93
94	.717581	.715478	.713385	.711301	.709229	.705112	.585986	.76789	94
95	$\bar{1}$.686132	$\bar{1}$.684029	$\bar{1}$.681936	$\bar{1}$.679854	$\bar{1}$.677780	$\bar{1}$.673664	0.655714	$\bar{1}$.81671	95
96	.631775	.629672	.627579	.625496	.623423	.619306	.748812	.87437	96
97	.589223	.587120	.585026	.582944	.580871	.576754	.871770	.94040	97
98	.510042	.507938	.505846	.503762	.501689	.497573	.988400	.99493	98
v	0.970874	0.966184	0.961538	0.956938	0.952381	0.943396	....	....	v
δ	.029559	.034401	.039221	.044017	.048790	.058269	....	....	δ
$\lambda\delta$	2.470687	2.536577	2.593516	2.643619	2.688332	2.765437	....	....	$\lambda\delta$

Formula, $\delta = Nap.\ log\ (1 + i) = -\ Nap.\ log\ v$.

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n
ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

The first Value under the Age x is $\lambda(1+a_x)$ for the whole Life.　　**4** PER CENT.

Pay-ments. $n.$	$x=10$	11	12	13	14	15	16	17	Pay-ments. $n.$
	1.316633	1.315019	1.313333	1.311567	1.309720	1.307791	1.305773	1.303662	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.291215	.291210	.291207	.291203	.291196	.291191	.291187	.291179	2
3	.457564	.457556	.457549	.457538	.457527	.457516	.457505	.457491	3
4	.572834	.572822	.572810	.572794	.572777	.572761	.572743	.572722	4
5	0.660148	0.660132	0.660114	0.660093	0.660071	0.660048	0.660024	0.659995	5
6	.729805	.729785	.729763	.729736	.729707	.729679	.729647	.729610	6
7	.787302	.787276	.787248	.787216	.787181	.787145	.787106	.787060	7
8	.835915	.835884	.835851	.835813	.835771	.835728	.835681	.835626	8
9	.877761	.877725	.877686	.877642	.877593	.877542	.877486	.877423	9
10	0.914284	0.914242	0.914198	0.914146	0.914090	0.914032	0.913967	0.913893	10
11	.946514	.946466	.946415	.946357	.946293	.946226	.946152	.946068	11
12	.975210	.975157	.975099	.975033	.974962	.974886	.974802	.974708	12
13	1.000952	1.000892	1.000827	1.000754	1.000673	1.000588	1.000494	1.000388	13
14	.024186	.024119	.024047	.023966	.023877	.023782	.023677	.023560	14
15	1.045269	1.045196	1.045116	1.045026	1.044928	1.044822	1.044707	1.044576	15
16	.064488	.064407	064319	.064220	.064112	.063996	.063868	.063725	16
17	.082076	.081987	.081891	.081783	.081665	.081537	.081397	.081240	17
18	.098228	.098131	.098026	.097908	.097779	.097640	.097486	.097316	18
19	.113106	.113001	.112886	.112758	.112618	.112466	.112299	.112113	19
20	1.126848	1.126733	1.126610	1.126470	1.126318	1.126153	1.125972	1.125770	20
21	.139570	.139446	.139311	.139161	.138996	.138818	.138622	.138404	21
22	.151373	.151239	.151094	.150932	.150754	.150561	.150349	.150114	22
23	.162344	.162201	.162044	.161869	.161678	.161470	.161241	.160988	23
24	.172559	.172405	.172237	.172049	.171843	.171620	.171374	.171102	24
25	1.182086	1.181921	1.181740	1.181538	1.181317	1.181077	1.180814	1.180521	25
26	.190983	.190805	.190610	.190395	.190158	.189901	.189618	.189305	26
27	.199299	.199108	.198901	.198671	.198418	.198142	.197840	.197505	27
28	.207084	.206879	.206659	.206412	.206142	.205847	.205524	.205166	28
29	.214377	.214160	.213922	.213660	.213371	.213057	.212712	.212330	29
30	1.221216	1.220984	1.220731	1.220451	1.220144	1.219809	1.219441	1.219034	30
31	.227633	.227386	.227116	.226818	.226491	.226135	.225743	.225310	31
32	.233659	.233396	.233109	.232792	.232444	.232065	.231648	.231188	32
33	.239320	.239041	.238736	.238399	.238029	.237626	.237183	.236695	33
34	.244642	.244345	.244022	.243663	.243271	.242843	.242374	.241854	34
35	1.249645	1.249332	1.248988	1.248607	1.248192	1.247738	1.247239	1.246690	35
36	.254352	.254019	.253655	.253252	.252811	.252331	.251802	.251220	36
37	.258780	.258427	.258042	.257616	.257148	.256640	.256081	.255465	37
38	.262948	.262574	.262165	.261715	.261221	.260682	.260091	.259440	38
39	.266868	.266473	.266042	.265565	.265043	.264473	.263848	.263161	39
40	1.270557	1.270140	1.269684	1.269180	1.268627	1.268027	1.267367	1.266642	40
41	.274028	.273587	.273105	.272574	.271992	.271357	.270661	.269897	41
42	.277293	.276827	.276318	.275758	.275144	.274474	.273742	.272936	42
43	.280363	.279872	.279335	.278744	.278098	.277391	.276620	.275772	43
44	.283247	.282730	.282165	.281543	.280862	.280119	.279307	.278415	44
	10	11	12	13	14	15	16	17	

FORMULA, $\lambda(1+a_x^{n-1}) = \lambda\,\dfrac{N_x - N_{x+n}}{D_x} = \lambda\dfrac{a_{x-1}^n}{vp_{x-1}}.$

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n
ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Pay-ments. n.	18	19	20	21	22	23	24	25	Pay-ments. n.
	1.301453	1.299144	1.296729	1.294205	1.291567	1.288808	1.285924	1.282910	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.291172	.291165	.291155	.291145	.291134	.291123	.291110	.291096	2
3	.457477	.457460	.457441	.457421	.457400	.457376	.457349	.457320	3
4	.572699	.572674	.572645	.572615	.572581	.572546	.572504	.572459	4
5	0.659963	0.659929	0.659890	0.659848	0.659803	0.659753	0.659698	0.659636	5
6	.729569	.729525	.729476	.729422	.729364	.729300	.729229	.729150	6
7	.787011	.786956	.786896	.786830	.786758	.786679	.786591	.786494	7
8	.835567	.835502	.835429	.835351	.835265	.835170	.835065	.834949	8
9	.877353	.877276	.877193	.877100	.876999	.876888	.876765	.876629	9
10	0.913813	0.913725	0.913628	0.913521	0.913404	0.913276	0.913134	0.912977	10
11	.945977	.945876	.945765	.945644	.945510	.945364	.945202	.945024	11
12	.974604	.974491	.974365	.974228	.974078	.973912	.973730	.973528	12
13	1.000273	1.000145	1.000005	.999851	.999683	.999498	.999293	.999068	13
14	.023431	.023289	.023133	1.022963	1.022775	1.022569	1.022342	1.022091	14
15	1.044434	1.044277	1.044105	1.043916	1.043709	1.043481	1.043229	1.042953	15
16	.063569	.063396	.063207	.062999	.062771	.062520	.062243	.061939	16
17	.081069	.080880	.080672	.080444	.080194	.079920	.079617	.079283	17
18	.097128	.096922	.096695	.096447	.096174	.095874	.095543	.095180	18
19	.111909	.111685	.111438	.111168	.110871	.110545	.110185	.109790	19
20	1.125549	1.125306	1.125038	1.124745	1.124423	1.124069	1.123679	1.123251	20
21	.138164	.137901	.137612	.137295	.136946	.136564	.136142	.135678	21
22	.149856	.149572	.149159	.148917	.148541	.148128	.147674	.147173	22
23	.160710	.160404	.160168	.159699	.159294	.158850	.158360	.157822	23
24	.170803	.170474	.170113	.169717	.169282	.168804	.168278	.167700	24
25	1.180200	1.179848	1.179460	1.179035	1.178569	1.178056	1.177492	1.176873	25
26	.188961	.188584	.188169	.187714	.187214	.186665	.186062	.185399	26
27	.197137	.196733	.196289	.195803	.195269	.194682	.194037	.193329	27
28	.204773	.204342	.203868	.203349	.202778	.202152	.201464	.200709	28
29	.211911	.211452	.210946	.210392	.209784	.209117	.208384	.207579	29
30	1.218588	1.218098	1.217559	1.216970	1.216322	1.215612	1.214832	1.213976	30
31	.224835	.224314	.223741	.223114	.222425	.221670	.220841	.219932	31
32	.230683	.230129	.229521	.228854	.228123	.227321	.226441	.225476	32
33	.236159	.235571	.234925	.234218	.233442	.232591	.231659	.230636	33
34	.241286	.240662	.239978	.239228	.238406	.237506	.236518	.235436	34
35	1.246087	1.245427	1.244701	1.243908	1.243038	1.242085	1.241040	1.239896	35
36	.250583	.249883	.249116	.248276	.247357	.246349	.245246	.244037	36
37	.254790	.254051	.253240	.252352	.251381	.250317	.249153	.247879	37
38	.258727	.257946	.257089	.256153	.255127	.254006	.252778	.251436	38
39	.262408	.261584	.260680	.259692	.258612	.257430	.256138	.254726	39
40	1.265848	1.264979	1.264027	1.262986	1.261848	1.260605	1.259246	1.257762	40
41	.269060	.268144	.267141	.266046	.264850	.263543	.262116	.260559	41
42	.272055	.271091	.270037	.268886	.267629	.266257	.264760	.263128	42
43	.274845	.273832	.272724	.271515	.270196	.268758	.267190	.265481	43
44	.277441	.276377	.275214	.273946	.272564	.271057	.269416	.267631	44
	18	19	20	21	22	23	24	25	

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Pay-ments. n.	$x=26$	27	28	29	30	31	32	33	Pay-ments n.
	1.279758	1.276466	1.273025	1.269428	1.265675	1.261752	1.257654	1.253372	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.291079	.291064	.291045	.291022	.291001	.290975	.290948	.290919	2
3	.457288	.457255	.457214	.457170	.457126	.457073	.457019	.456957	3
4	.572410	.572357	.572296	.572229	.572159	.572081	.571995	.571899	4
5	0.659568	0.659496	0.659413	0.659322	0.659227	0.659119	0.659000	0.658868	5
6	.729063	.728970	.728864	.728748	.728626	.728486	.728335	.728167	6
7	.786388	.786273	.786143	.786001	.785849	.785678	.785492	.785285	7
8	.834821	.834684	.834530	.834359	.834177	.833973	.833750	.833503	8
9	.876480	.876318	.876137	.875937	.875724	.875485	.875223	.874934	9
10	0.912805	0.912619	0.912409	0.912180	0.911933	0.911657	0.911355	0.911021	10
11	.944827	.944614	.944376	.944115	.943833	.943518	.943174	.942794	11
12	.973307	.973066	.972798	.972503	.972184	.971830	.971441	.971013	12
13	.998820	.998551	.998250	.997921	.997564	.997167	.996732	.996253	13
14	1.021816	1.021516	1.021182	1.020816	1.020419	1.019977	1.019494	1.018962	14
15	1.042648	1.042317	1.041948	1.041543	1.041104	1.040617	1.040083	1.039494	15
16	.061604	.061239	.060834	.060389	.059906	.059370	.058783	.058136	16
17	.078917	.078517	.078073	.077586	.077057	.076471	.075828	.075120	17
18	.094780	.094344	.093861	.093329	.092751	.092112	.091411	.090640	18
19	.109355	.108881	.108355	.107778	.107150	.106455	.105694	.104856	19
20	1.122779	1.122265	1.121695	1.121070	1.120389	1.119637	1.118812	1.117905	20
21	.135169	.134613	.133997	.133322	.132586	.131773	.130882	.129903	21
22	.146624	.146024	.145361	.144633	.143839	.142963	.142004	.140949	22
23	.157231	.156585	.155872	.155089	.154236	.153294	.152263	.151130	23
24	.167066	.166372	.165606	.164766	.163850	.162840	.161734	.160520	24
25	1.176193	1.175449	1.174629	1.173729	1.172748	1.171667	1.170483	1.169184	25
26	.184671	.183876	.182998	.182037	.180988	.179833	.178568	.177181	26
27	.192552	.191702	.190765	.189739	.188620	.187388	.186039	.184561	27
28	.199880	.198974	.197976	.196882	.195689	.194377	.192942	.191370	28
29	.206696	.205731	.204669	.203506	.202237	.200843	.199318	.197648	29
30	1.213037	1.212011	1.210883	1.209647	1.208299	1.206819	1.205202	1.203432	30
31	.218935	.217846	.216648	.215337	.213908	.212340	.210627	.208753	31
32	.224419	.223264	.221995	.220607	.219094	.217434	.215623	.213643	32
33	.229516	.228293	.226950	.225482	.223882	.222129	.220217	.218128	33
34	.234251	.232957	.231538	.229987	.228298	.226449	.224433	.222234	34
35	1.238644	1.237278	1.235780	1.234144	1.232364	1.230416	1.228294	1.225982	35
36	.242716	.241275	.239697	.237974	.236099	.234051	.231822	.229395	36
37	.246486	.244968	.243306	.241494	.239524	.237374	.235035	.232492	37
38	.249970	.248373	.246627	.244723	.242656	.240402	.237953	.235292	38
39	.253185	.251507	.249674	.247678	.245512	.243152	.240592	.237814	39
40	1.256144	1.254384	1.252462	1.250372	1.248106	1.245641	1.242969	1.240074	40
41	.258862	.257017	.255006	.252821	.250455	.247883	.245100	.242089	41
42	.261351	.259421	.257320	.255039	.252571	.249894	.247001	.243875	42
43	.263623	.261608	.259415	.257038	.254470	.251688	.248686	.245447	43
44	.265691	.263588	.261305	.258832	.256164	.253279	.250170	.246822	44
	26	27	28	29	30	31	32	33	

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Pay-ments. n.	34	35	36	37	38	39	40	41	Pay-ments. n.
	1.248902	1.244234	1.239367	1.234282	1.228972	1.223433	1.217656	1.211632	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.290884	.290845	.290806	.290765	.290713	.290660	.290600	.290538	2
3	.456885	.456808	.456729	.456641	.456537	.456426	.456306	.456176	3
4	.571790	.571674	.571551	.571413	.571255	.571087	.570901	.570699	4
5	0.658721	0.658564	0.658395	0.658205	0.657991	0.657761	0.657507	0.657231	5
6	.727980	.727778	.727559	.727317	.727043	.726748	.726424	.726069	6
7	.785055	.784808	.784538	.784239	.783904	.783540	.783142	.782706	7
8	.833229	.832932	.832609	.832251	.831851	.831418	.830941	.830419	8
9	.874614	.874265	.873886	.873467	.872999	.872491	.871934	.871322	9
10	0.910652	0.910251	0.909813	0.909329	0.908792	0.908205	0.907561	0.906857	10
11	.942375	.941917	.941418	.940867	.940254	.939587	.938854	.938051	11
12	.970540	.970024	.969460	.968838	.968148	.967396	.966570	.965665	12
13	.995724	.995146	.994515	.993820	.993049	.992208	.991285	.990272	13
14	1.018374	1.017733	1.017032	1.016259	1.015403	1.014470	1.013444	1.012321	14
15	1.038846	1.038137	1.037363	1.036510	1.035565	1.034535	1.033404	1.032165	15
16	.057424	.056645	.055794	.054856	.053820	.052689	.051448	.050088	16
17	.074341	.073490	.072558	.071533	.070401	.069164	.067808	.066323	17
18	.089791	.088863	.087848	.086731	.085499	.084154	.082678	.081062	18
19	.103935	.102927	.101825	.100613	.099277	.097817	.096218	.094466	19
20	1.116908	1.115817	1.114624	1.113313	1.111869	1.110291	1.108563	1.106671	20
21	.128827	.127649	.126362	.124948	.123391	.121691	.119830	.117793	21
22	.139791	.138524	.137138	.135617	.133944	.132117	.130117	.127931	22
23	.149886	.148525	.147038	.145406	.143612	.141654	.139512	.137171	23
24	.159186	.157729	.156136	.154389	.152471	.150377	.148088	.145589	24
25	1.167759	1.166201	1.164499	1.162633	1.160585	1.158352	1.155913	1.153250	25
26	.175660	.173998	.172183	.170195	.168014	.165638	.163044	.160214	26
27	.182941	.181172	.179240	.177126	.174809	.172286	.169532	.166533	27
28	.189648	.187767	.185716	.183472	.181016	.178341	.175427	.172254	28
29	.195820	.193825	.191651	.189274	.186675	.183847	.180768	.177420	29
30	1.201495	1.199383	1.197082	1.194569	1.191824	1.188841	1.185595	1.182070	30
31	.206705	.204473	.202043	.199392	.196348	.193357	.189943	.186240	31
32	.211481	.209126	.206564	.203772	.200729	.197428	.193845	.189964	32
33	.215849	.213369	.210674	.207739	.204544	.201083	.197332	.193274	33
34	.219835	.217228	.214397	.211319	.207973	.204351	.200433	.196199	34
35	1.223463	1.220727	1.217760	1.214538	1.211039	1.207259	1.203174	1.198769	35
36	.226753	.223888	.220784	.217417	.213768	.209831	.205583	.201010	36
37	.229727	.226732	.223491	.219981	.216183	.212092	.207685	.202950	37
38	.232404	.229279	.225902	.222252	.218307	.214065	.209505	.204614	38
39	.234802	.231548	.228038	.224248	.220161	.215774	.211067	.206029	39
40	1.236940	1.233559	1.229916	1.225992	1.221767	1.217241	1.212394	1.207218	40
41	.238834	.235328	.231558	.227503	.223146	.218488	.213510	.208205	41
42	.240502	.236874	.232980	.228800	.224319	.219537	.214437	.209014	42
43	.241959	.238214	.234202	.229904	.225305	.220407	.215197	.209668	43
44	.243222	.239366	.235241	.230832	.226124	.221122	.215811	.210187	44
	34	35	36	37	38	39	40	41	

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TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Payments. n.	$x=42$	43	44	45	46	47	48	49	Payments. n.
	1.205342	1.198793	1.191959	1.184839	1.177421	1.169692	1.161644	1.153265	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.290463	.290386	.290301	.290205	.290101	.289986	.289861	.289722	2
3	.456026	.455868	.455691	.455496	.455283	.455047	.454790	.454507	3
4	.570471	.570227	.569956	.569656	.569329	.568968	.568573	.568137	4
5	0.656921	0.656587	0.656216	0.655808	0.655361	0.654869	0.654329	0.653735	5
6	.725673	.725245	.724770	.724248	.723676	.723046	.722356	.721596	6
7	.782220	.781693	.781110	.780468	.779765	.778992	.778144	.777212	7
8	.829838	.829208	.828512	.827746	.826906	.825983	.824972	.823860	8
9	.870643	.869904	.869089	.868194	.867212	.866133	.864951	.863650	9
10	0.906075	0.905224	0.904285	0.903253	0.902123	0.900882	0.899521	0.898025	10
11	.937162	.936194	.935126	.933953	.932668	.931257	.929710	.928011	11
12	.964664	.963572	.962370	.961050	.959604	.958016	.956275	.954366	12
13	.989154	.987935	.986593	.985120	.983506	.981735	.979794	.977665	13
14	1.011081	1.009729	1.008241	1.006608	1.004820	1.002858	1.000711	.998356	14
15	1.030798	1.029307	1.027667	1.025869	1.023900	1.021742	1.019379	1.016790	15
16	.048589	.046954	.045157	.043187	.041030	.038668	.036084	.033255	16
17	.064687	.062902	.060942	.058794	.056444	.053871	.051058	.047981	17
18	.079284	.077344	.075214	.072882	.070333	.067543	.064496	.061164	18
19	.092541	.090440	.088136	.085614	.082859	.079847	.076558	.072965	19
20	1.104593	1.102326	1.099842	1.097126	1.094159	1.090918	1.087382	1.083525	20
21	.115561	.113119	.110450	.107533	.104349	.100874	.097087	.092959	21
22	.125532	.122919	.120059	.116936	.113531	.109818	.105775	.101374	22
23	.134605	.131811	.128756	.125423	.121792	.117837	.113536	.108859	23
24	.142852	.139872	.136618	.133071	.129211	.125011	.120449	.115496	24
25	1.150337	1.147169	1.143712	1.139948	1.135856	1.131410	1.126586	1.121356	25
26	.157122	.153761	.150098	.146115	.141790	.137096	.132012	.126509	26
27	.163258	.159702	.155832	.151628	.147069	.142129	.136786	.131012	27
28	.168794	.165041	.160962	.156536	.151745	.146561	.140963	.134925	28
29	.173774	.169822	.165533	.160888	.155865	.150441	.144593	.138298	29
30	1.178236	1.174086	1.169589	1.164725	1.159475	1.153815	1.147726	1.141185	30
31	.182218	.177871	.173168	.168089	.162617	.156729	.150408	.143630	31
32	.185755	.181213	.176307	.171018	.165331	.159224	.152681	.145682	32
33	.188880	.184146	.179041	.173550	.167656	.161340	.154589	.147383	33
34	.191624	.186703	.181406	.175719	.169629	.163117	.156170	.148775	34
35	1.194016	1.188913	1.183433	1.177560	1.171285	1.164590	1.157466	1.149897	35
36	.196086	.190809	.185153	.179107	.172659	.165797	.158510	.150789	36
37	.197862	.192420	.186599	.180390	.173785	.166770	.159339	.151484	37
38	.199370	.193773	.187799	.181442	.174693	.167543	.159986	.152015	38
39	.200637	.194896	.188782	.182290	.175414	.168146	.160481	.152413	39
40	1.201690	1.195816	1.189576	1.182964	1.175977	1.168607	1.160852	1.152703	40
41	.202553	.196559	.190206	.183490	.176408	.168952	.161122	.152910	41
42	.203249	.197150	.190698	.183892	.176730	.169204	.161314	.153050	42
43	.203803	.197610	.191074	.184193	.176965	.169384	.161445	.153141	43
44	.204234	.197963	.191356	.184413	.177133	.169505	.161530	.153197	44
	42	43	44	45	46	47	48	49	

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Payments. n.	50	51	52	53	54	55	56	57	Payments. n.
	1.144542	1.135469	1.126031	1.116217	1.106014	1.095410	1.084400	1.072966	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289571	.289400	.289216	.289015	.288795	.288548	.288281	.287982	2
3	.454196	.453849	.453474	.453064	.452609	.452108	.451558	.450952	3
4	.567659	.567130	.566556	.565925	.565228	.564458	.563617	.562691	4
5	0.653082	0.652363	0.651580	0.650718	0.649767	0.648721	0.647576	0.646315	5
6	.720763	.719845	.718842	.717740	.716526	.715191	.713729	.712123	6
7	.776190	.775063	.773833	.772481	.770993	.769358	.767569	.765604	7
8	.822640	.821297	.819829	.818217	.816445	.814499	.812371	.810033	8
9	.862225	.860656	.858942	.857061	.854994	.852727	.850245	.847525	9
10	0.896385	0.894583	0.892613	0.890452	0.888081	0.885479	0.882637	0.879518	10
11	.926149	.924104	.921869	.919419	.916732	.913789	.910569	.907045	11
12	.952275	.949978	.947469	.944720	.941709	.938409	.934807	.930865	12
13	.975335	.972779	.969987	.966931	.963583	.959922	.955925	.951558	13
14	.995779	.992955	.989871	.986498	.982807	.978774	.974375	.969578	14
15	1.013960	1.010859	1.007475	1.003778	0.999736	0.995322	0.990519	0.985279	15
16	.030162	.026777	.023087	.019057	1.014656	1.009861	1.004640	.998959	16
17	.044619	.040945	.036941	.032573	.027811	.022622	.016986	1.010859	17
18	.057527	.053556	.049232	.044522	.039390	.033811	.027756	.021188	18
19	.069049	.064775	.060127	.055071	.049569	.043596	.037127	.030117	19
20	1.079322	1.074743	1.069768	1.064362	1.058491	1.052128	1.045244	1.037800	20
21	.088468	.083579	.078276	.072521	.066284	.059531	.052239	.044373	21
22	.096590	.091392	.085760	.079657	.073056	.065920	.058234	.049957	22
23	.103782	.098274	.092315	.085870	.078908	.071404	.063332	.054663	23
24	.110126	.104310	.098030	.091247	.083938	.076071	.067634	.058591	24
25	1.115697	1.109578	1.102979	1.095870	1.088222	1.080014	1.071227	1.061835	25
26	.120563	.114144	.107239	.099814	.091845	.083309	.074197	.064480	26
27	.124787	.118078	.110875	.103148	.094873	.086035	.076619	.066608	27
28	.128426	.121439	.113953	.105940	.097381	.088259	.078569	.068295	28
29	.131537	.124284	.116531	.108251	.099428	.090050	.080116	.069610	29
30	1.134173	1.126669	1.118665	1.110140	1.101077	1.091471	1.081322	1.070611	30
31	.136383	.128644	.120411	.111662	.102385	.092580	.082240	.071362	31
32	.138214	.130260	.121817	.112869	.103407	.093423	.082929	.071909	32
33	.139713	.131563	.122933	.113809	.104183	.094057	.083430	.072299	33
34	.140922	.132596	.123803	.114528	.104767	.094518	.083788	.072563	34
35	1.141880	1.133402	1.124468	1.115067	1.105193	1.094847	1.084031	1.072733	35
36	.142628	.134018	.124966	.115459	.105495	.095070	.084187	.072838	36
37	.143200	.134479	.125329	.115739	.105701	.095214	.084284	.072899	37
38	.143628	.134816	.125587	.115928	.105834	.095303	.084339	.072935	38
39	.143940	.135055	.125763	.116051	.105916	.095354	.084373	.072953	39
40	1.144163	1.135218	1.125876	1.116127	1.105963	1.095385	1.084388	1.072961	40
41	.144314	.135323	.125946	.116171	.105991	.095399	.084396	.072964	41
42	.144412	.135388	.125987	.116195	.106004	.095406	.084399	.072965	42
43	.144472	.135426	.126010	.116208	.106011	.095409	.084399	.072966	43
44	.144507	.135447	.126022	.116214	.106013	.095409	.084400		44
45	1.144526	1.135458	1.126028	1.116216	1.106013	1.095410			45
46	.144537	.135463	.126029	.116217	.106014				46
47	.144541	.135466	.126030	.116217					47
48	.144541	.135467	.126031						48
49	.144542	.135469							49
	50	51	52	53	54	55	56	57	

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. **4 PER CENT.**

Pay-ments. n.	$x=58$	59	60	61	62	63	64	65	Pay-ments. n.
	1.061107	1.048803	1.036042	1.022821	1.009130	0.994950	0.980284	0.965118	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.287660	.287305	.286912	.286481	.286011	.285490	.284921	.284292	2
3	.450294	.449567	.448766	.447888	.446929	.445869	.444707	.443431	3
4	.561680	.560568	.559343	.558003	.556534	.554915	.553142	.551197	4
5	0.644940	0.643427	0.641765	0.639943	0.637947	0.635751	0.633349	0.630712	5
6	.710369	.708441	.706324	.704004	.701465	.698676	.695623	.692286	6
7	.763457	.761100	.758512	.755680	.752582	.749182	.745471	.741409	7
8	.807481	.804679	.801608	.798249	.794577	.790557	.786166	.781369	8
9	.844552	.841294	.837727	.833828	.829572	.824914	.819834	.814292	9
10	0.876115	0.872389	0.868313	0.863865	0.859010	0.853700	0.847930	0.841641	10
11	.903200	.898995	.894492	.889392	.883930	.877975	.871501	.864458	11
12	.926569	.921878	.916756	.911176	.905105	.898497	.891319	.883533	12
13	.946804	.941615	.935959	.929808	.923125	.915860	.907991	.899465	13
14	.964355	.958664	.952472	.945748	.938453	.930543	.921985	.912738	14
15	0.979585	0.973391	0.966663	0.959367	0.951469	0.942918	0.933690	0.923742	15
16	.992791	.986096	.978832	.970962	.962477	.953304	.943427	.932811	16
17	1.004222	.997024	.989233	.980817	.971743	.961967	.951472	.940221	17
18	.014080	1.006388	.998078	.989123	.979490	.969141	.958060	.946210	18
19	.022546	.014370	1.005558	.996082	.985917	.975027	.963393	.950996	19
20	1.029777	1.021132	1.011835	1.001865	0.991199	0.979798	0.967661	0.954769	20
21	.035912	.026815	.017058	.006623	.995485	.983621	.971029	.957693	21
22	.041075	.031550	.021361	.010490	.998923	.986641	.973642	.959917	22
23	.045381	.035454	.024861	.013593	1.001641	.988985	.975629	.961578	23
24	.048935	.038632	.027672	.016048	.003753	.990769	.977115	.962787	24
25	1.051830	1.041187	1.029897	1.017958	1.005360	0.992103	0.978197	0.963646	25
26	.054158	.043210	.031629	.019410	.006562	.993075	.978966	.964228	26
27	.056003	.044786	.032946	.020498	.007439	.993766	.979487	.964606	27
28	.057441	.045985	.033934	.021291	.008062	.994234	.979825	.964837	28
29	.058535	.046884	.034654	.021855	.008484	.994538	.980032	.964974	29
30	1.059355	1.047539	1.035166	1.022237	1.008758	0.994723	0.980154	0.965049	30
31	.059953	.048005	.035512	.022484	.008925	.994833	.980222	.965088	31
32	.060379	.048320	.035736	.022636	.009024	.994894	.980257	.965107	32
33	.060667	.048524	.035875	.022725	.009079	.994926	.980274	.965116	33
34	.060853	.048650	.035955	.022775	.009108	.994941	.980282	.965117	34
35	1.060968	1.048723	1.036001	1.022802	1.009121	0.994948	0.980282	0.965118	35
36	.061035	.048766	.036025	.022813	.009128	.994948	.980284	42	
37	.061074	.048788	.036035	.022820	.009128	.994950		42	
38	.061094	.048797	.036041	.022820	.009130	43	43		
39	.061102	.048801	.036041	.022821	44	44	1.205342	58	
40	1.061106	1.048802	1.036042	45	45	1.198793	.205342	57	
41	.061107	.048803	46	46	1.191959	.198792	.205342	56	
42	.061107	47	47	1.184839	.191960	.198792	.205341	55	
	48	48	1.177421	.184838	.191959	1.198790	1.205338	54	
	49	1.169692	.177420	.184838	.191958	.198787	.205332	53	
	49	1.161644	.169691	.177420	.184836	.191955	.198781	.205321	52
51	1.153265	.161644	.169691	.177418	.184833	.191948	.198769	.205300	51
50	.153265	.161644	.169689	.177414	.184826	.191935	.198747	.205266	50
49	1.153264	1.161642	1.169685	1.177407	1.184812	1.191912	1.198710	1.205209	49
48	.153262	.161638	.169677	.177392	.184787	.191872	.198650	.205122	48
47	.153258	.161629	.169661	.177365	.184745	.191808	.198557	.204993	47
46	.153248	.161612	.169633	.177320	.184676	.191708	.198419	.204812	46
45	.153230	.161582	.169584	.177246	.184570	.191562	.198227	.204565	45
	49	48	47	46	45	44	43	42	

TABLE XLIV.

*57

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Pay-ments. n.	66	67	68	69	70	71	72	73	Pay-ments. n.
	0.949453	0.933271	0.916583	0.899356	0.881623	0.863356	0.844568	0.825252	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.283608	.282848	.282028	.281111	.280119	.279023	.277826	.276518	2
3	.442034	.440493	.438825	.436973	.434958	.432742	.430325	.427673	3
4	.549065	.546733	.544183	.541374	.538313	.534961	.531297	.527292	4
5	0.627836	0.624679	0.621234	0.617447	0.613328	0.608817	0.603900	0.598536	5
6	.688638	.684643	.680284	.675511	.670316	.664644	.658470	.651748	6
7	.736976	.732127	.726850	.721076	.714804	.707970	.700546	.692480	7
8	.776139	.770433	.764225	.757451	.750105	.742118	.733460	.724082	8
9	.808262	.801690	.794553	.786785	.778375	.769254	.759395	.748748	9
10	0.834803	0.827369	0.819311	0.810560	0.801106	0.790885	0.779868	0.768008	10
11	.856820	.848531	.839564	.829851	.819388	.808109	.795989	.782987	11
12	.875100	.865969	.856116	.845477	.834046	.821761	.808606	.794547	12
13	.890254	.880304	.869599	.858073	.845724	.832499	.818391	.803367	13
14	.902769	.892036	.880516	.868150	.854946	.840860	.825882	.810003	14
15	0.913050	0.901568	0.889279	0.876134	0.862149	0.847278	0.831533	0.814911	15
16	.921430	.909241	.896241	.882386	.867691	.852130	.835721	.818460	16
17	.928190	.915351	.901704	.887206	.871888	.855732	.838754	.820971	17
18	.933583	.920154	.905923	.890861	.875008	.858343	.840902	.822670	18
19	.937829	.923868	.909125	.893580	.877272	.860194	.842356	.823765	19
20	0.941117	0.926690	0.911510	0.895556	0.878878	0.861448	0.843294	0.824438	20
21	.943616	.928793	.913245	.896956	.879966	.862256	.843870	.824833	21
22	.945481	.930324	.914476	.897908	.880668	.862754	.844209	.825051	22
23	.946838	.931411	.915310	.898522	.881100	.863046	.844396	.825164	23
24	.947802	.932147	.915849	.898899	.881354	.863208	.844493	.825219	24
25	0.948455	0.932623	0.916181	0.899121	0.881494	0.863291	0.844540	0.825242	25
26	.948878	.932916	.916376	.899243	.881567	.863332	.844560	.825250	26
27	.949138	.933089	.916483	.899307	.881602	.863349	.844567	.825252	27
28	.949291	.933183	.916539	.899338	.881617	.863355	.844568	34	
29	.949375	.933232	.916566	.899351	.881622	.863356		1.248902	66
30	0.949419	0.933256	0.916578	0.899355	0.881623	35	1.244234	.248901	65
31	.949440	.933267	.916581	.899356	36	1.244234	1.248901	64	
32	.949450	.933269	.916583	37	1.239367	1.244234	1.248900	63	
33	.949451	.933271	38	1.234282	.239367	.244234	.248898	62	
34	.949453	39	1.228972	.234283	.239366	.244233	.248894	61	
	40	1.223433	.228971	.234283	.239366	.244231	.248888	60	
	41	1.217656	.223433	.228970	.234282	.239364	.244228		
59	1.211632	1.217656	1.223433	1.228969	1.234280	1.239360	1.244220	1.248875	59
58	.211632	.217656	.223432	.228967	.234276	.239352	.244207	.248853	58
57	.211632	.217655	.223430	.228963	.234267	.239338	.244184	.248819	57
56	.211630	.217652	.223425	.228954	.234252	.239314	.244147	.248765	56
55	.211628	.217647	.223415	.228938	.234227	.239274	.244090	.248686	55
54	1.211622	1.217637	1.223398	1.228911	1.234185	1.239214	1.244006	1.248574	54
53	.211612	.217619	.223369	.228867	.234121	.239125	.243889	.248422	53
52	.211592	.217588	.223323	.228799	.234027	.239000	.243727	.248219	52
51	.211560	.217538	.223250	.228698	.233894	.238829	.243512	.247953	51
50	.211507	.217461	.223144	.228557	.233712	.238600	.243230	.247613	50
49	1.211425	1.217348	1.222994	1.228364	1.233470	1.238301	1.242869	1.247184	49
48	.211304	.217189	.222789	.228111	.233153	.237919	.242415	.246654	48
47	.211134	.216971	.222515	.227770	.232746	.237437	.241854	.246009	47
46	.210902	.216679	.222157	.227339	.232236	.236842	.241169	.245321	46
45	.210592	.216299	.221699	.226796	.231603	.236115	.240345	.244308	45
	41	40	39	38	37	36	35	34	

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF *n* ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. **4 PER CENT.**

Payments. n.	x=74	75	76	77	78	79	80	81	Payments. n.
	0.805400	0.785049	0.764174	0.742769	0.720875	0.698471	0.675562	0.652146	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.275065	.273492	.271774	.269873	.267807	.265547	.263074	.260385	2
3	.424759	.421598	.418136	.414336	.410203	.405700	.400793	.395450	3
4	.522908	.518143	.512941	.507254	.501088	.494380	.487095	.479197	4
5	0.592676	0.586317	0.579393	0.571857	0.563698	0.554856	0.545289	0.534963	5
6	.644425	.636495	.627890	.618553	.608478	.597600	.585882	.573294	6
7	.683722	.674263	.664030	.652969	.641076	.628292	.614587	.599946	7
8	.713931	.702999	.691214	.678528	.664943	.650410	.634915	.618441	8
9	.737262	.724930	.711690	.697499	.682372	.666274	.649192	.631143	9
10	0.755259	0.741621	0.727040	0.711486	0.694987	0.677512	0.659077	0.639575	10
11	.769063	.754228	.738439	.721678	.703979	.685338	.665675	.644944	11
12	.779550	.763641	.746788	.728977	.710270	.690583	.669890	.648213	12
13	.787413	.770563	.752788	.734101	.714497	.693941	.672462	.650123	13
14	.793214	.775551	.757010	.737552	.717209	.695994	.673966	.651175	14
15	0.797403	0.779068	0.759860	0.739769	0.718869	0.697196	0.674796	0.651718	15
16	.800361	.781446	.761692	.741127	.719842	.697859	.675225	.651979	16
17	.802362	.782975	.762816	.741923	.720379	.698202	.675430	.652090	17
18	.803651	.783914	.763475	.742363	.720656	.698366	.675517	.652133	18
19	.804443	.784464	.763838	.742590	.720789	.698436	.675551	.652146	19
20	0.804907	0.784768	0.764026	0.742699	0.720846	0.698463	0.675562	[26] 1.279758	74
21	.805163	.784925	.764117	.742746	.720868	.698471	[27] 1.276466	.279758	73
22	.805295	.785001	.764156	.742764	.720875	[28] 1.273025	.276467	.279758	72
23	.805360	.785033	.764171	.742769	[29] 1.269428	.273025	.276467	.279757	71
24	.805387	.785046	.764174	[30] 1.265675	.269428	.273025	.276467	.279756	70
25	0.805397	0.785049	[31] 1.261752	1.265676	1.269428	1.273024	1.276465	1.279753	69
26	.805400	[32] 1.257654	.261752	.265676	.269427	.273023	.276463	.279749	68
67	[33] 1.253372	.257654	.261752	.265675	.269426	.273020	.276458	.279741	67
66	.253373	.257654	.261751	.265674	.269423	.273015	.276450	.279727	66
65	.253373	.257653	.261749	.265671	.269418	.273006	.276435	.279705	65
64	1.253372	1.257652	1.261746	1.265665	1.269409	1.272991	1.276412	1.279670	64
63	.253371	.257649	.261740	.265655	.269392	.272966	.276375	.279620	63
62	.253367	.257642	.261730	.265638	.269366	.272928	.276322	.279548	62
61	.253361	.257631	.261712	.265610	.269325	.272871	.276246	.279451	61
60	.253349	.257612	.261682	.265568	.269266	.272792	.276143	.279320	60
59	1.253329	1.257581	1.261637	1.265504	1.269182	1.272683	1.276006	1.279150	59
58	.253296	.257533	.261570	.265416	.269067	.272537	.275826	.278932	58
57	.253245	.257462	.261476	.265294	.268913	.272348	.275596	.278658	57
56	.253170	.257363	.261348	.265132	.268713	.272105	.275307	.278319	56
55	.253065	.257227	.261177	.264920	.268456	.271799	.274949	.277906	55
54	1.252921	1.257046	1.260953	1.264649	1.268133	1.271421	1.274513	1.277409	54
53	.252729	.256809	.260666	.264308	.267734	.270961	.273988	.276819	53
52	.252478	.256505	.260305	.263886	.267247	.270407	.273365	.276126	52
51	.252157	.256124	.259858	.263371	.266662	.269749	.272634	.275321	51
50	.251753	.255651	.259314	.262752	.265967	.268976	.271783	.274392	50
49	1.251253	1.255075	1.258660	1.262017	1.265150	1.268077	1.270803	1.273332	49
48	.250643	.254383	.257882	.261154	.264200	.267041	.269682	.272128	48
47	.249910	.253560	.256968	.260149	.263105	.265858	.268411	.270773	47
46	.249038	.252592	.255906	.258991	.261854	.264514	.266979	.269255	46
45	.248014	.251467	.254680	.257667	.260433	.263000	.265375	.267565	45
	33	32	31	30	29	28	27	26	

TABLE XLIV. *59

LIFE AND TEMPORARY ANNUITIES.　LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. **4 PER CENT.**

Pay-ments. $n.$	82	83	84	85	86	87	88	89	Pay-ments. $n.$
	0.628187	0.603703	0.578554	0.552712	0.525914	0.497713	0.467718	0.434386	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.257424	.254238	.250719	.246926	.242837	.238267	.233496	.225360	2
3	.389631	.383339	.376475	.369109	.361116	.352422	.341682	.326255	3
4	.470629	.461402	.451421	.440707	.429204	.415840	.399517	.378512	4
5	0.523818	0.511880	0.499024	0.485329	0.470086	0.452376	0.431695	0.406483	5
6	.559791	.545384	.529994	.513258	.494585	.473468	.449522	.421206	6
7	.584318	.567754	.549865	.530408	.509034	.485385	.459073	.428627	7
8	.600972	.582338	.562249	.540626	.517295	.491835	.463930	.432148	8
9	.611946	.591516	.569691	.546524	.521796	.495133	.466244	.433635	9
10	0.618899	0.597065	0.574008	0.549752	0.524104	0.496709	0.467223	0.434205	10
11	.623121	.600294	.576377	.551409	.525209	.497375	.467599	.434386	11
12	.625583	.602070	.577596	.552205	.525677	.497632	.467718		12
13	.626938	.602984	.578182	.552541	.525857	.497713			13
14	.627637	.603424	.578428	.552671	.525914				14
								18	82
							19	1.301453	81
15	0.627973	0.603609	0.578525	0.552712			1.299144	.301453	81
						20	.299144	.301453	80
16	.628115	.603682	.578554		**21**	1.296729			80
17	.628170	.603703		**22**	1.294205	1.296729	1.299144	1.301453	79
18	.628187		**23**	1.291567	.294205	.296729	.299144	.301452	78
		24	1.288808	.291567	.294205	.296729	.299143	.301450	77
	25	1.285924	.288808	.291567	.294205	.296728	.299141	.301448	76
75	1.282910	.285924	.288808	.291566	.294204	.296726	.299138	.301442	75
74	1.282909	1.285924	1.288808	1.291565	1.294202	1.296723	1.299133	1.301433	73
73	.282909	.285924	.288807	.291563	.294199	.296717	.299123	.301419	74
72	.282908	.285923	.288805	.291560	.294193	.296707	.299108	.301396	72
71	.282907	.285921	.288801	.291553	.294182	.296691	.299084	.301362	71
70	.282905	.285917	.288794	.291542	.294165	.296666	.299049	.301316	70
69	1.282901	1.285909	1.288783	1.291524	1.294138	1.296629	1.298999	1.301251	69
68	.282893	.285897	.288764	.291496	.294099	.296577	.298932	.301166	68
67	.282880	.285877	.288734	.291455	.294045	.296506	.298841	.301054	67
66	.282859	.285846	.288691	.291397	.293970	.296410	.298724	.300910	66
65	.282826	.285800	.288630	.291319	.293870	.296287	.298573	.300730	65
64	1.282778	1.285736	1.288547	1.291213	1.293739	1.296128	1.298383	1.300507	64
63	.282711	.285648	.288436	.291075	.293572	.295928	.298148	.300236	63
62	.282618	.285531	.288291	.290899	.293361	.295681	.297863	.299909	62
61	.282495	.285378	.288105	.290677	.293101	.295380	.297519	.299522	61
60	.282333	.285182	.287871	.290403	.292784	.295018	.297111	.299067	60
59	1.282127	1.284936	1.287582	1.290069	1.292403	1.294589	1.296632	1.298539	59
58	.281867	.284631	.287230	.289668	.291950	.294084	.296076	.297931	58
57	.281546	.284260	.286807	.289191	.291419	.293498	.295435	.297236	57
56	.281154	.283814	.286304	.288631	.290802	.292824	.294704	.296449	56
55	.280683	.283284	.285714	.287981	.290091	.292053	.293875	.295563	55
54	1.280124	1.282661	1.285028	1.287231	1.289279	1.291180	1.292942	1.294572	54
53	.279468	.281938	.284238	.286375	.288359	.290197	.291898	.293470	53
52	.278704	.281105	.283336	.285405	.287322	.289097	.290737	.292250	52
51	.277825	.280153	.282312	.284312	.286163	.287873	.289451	.290906	51
50	.276820	.279073	.281160	.283090	.284873	.286518	.288035	.289431	50
49	1.275681	1.277857	1.279870	1.281729	1.283444	1.285025	1.286481	1.287819	49
48	.274397	.276496	.278435	.280222	.281869	.283386	.284781	.286063	48
47	.272960	.274981	.276844	.278561	.280141	.281593	.282929	.284154	47
46	.271360	.273302	.275091	.276736	.278250	.279640	.280916	.282087	46
45	.269587	.271450	.273165	.274740	.276188	.277516	.278735	.279852	45
	25	24	23	22	21	20	19	18	

TABLE XLIV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4 PER CENT.

Pay-ments. n.	x=90	91	92	93	94	95	96	97	Pay-ments. n.
	0.402608	0.373607	0.344609	0.314696	0.284280	0.252440	0.214754	0.178369	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.216431	.208653	.200520	.191140	.180950	.170487	.153574	.141329	2
3	.310577	.296383	.281311	.264501	.246836	.226526	.200677	.178369	3
4	.357604	.338221	.317835	.295797	.272024	.246291	.214754	10	
5	0.381571	0.358362	0.334359	0.308421	0.281336	0.252440	11		
6	.393460	.367723	.341183	.313181	.284280	12		1.316633	90
7	.399061	.371634	.343779	.314696	13		1.315019	1.316633	89
8	.401417	.373129	.344609	14		1.313333	.315020	.316633	88
9	.402319	.373607	15		1.311567	.313333	.315020	.316633	87
10	0.402608	16		1.309720	.311567	.313333	.315019	.316632	86
	17		1.307791	.309720	.311567	.313333	.315019	.316631	85
		1.305773	.307791	.309720	.311567	.313333	.315018	.316629	84
83	1.303662	.305774	.307791	.309720	.311566	.313331	.315016	.316626	83
82	.303662	.305774	.307791	.309719	.311565	.313329	.315011	.316620	82
81	.303662	.305773	.307790	.309718	.311563	.313325	.315006	.316610	81
80	.303661	.305772	.307789	.309716	.311558	.313318	.314995	.316595	80
79	1.303660	1.305771	1.307786	1.309712	1.311551	1.313308	1.314979	1.316572	79
78	.303659	.305769	.307782	.309705	.311540	.313291	.314956	.316541	78
77	.303656	.305764	.307775	.309692	.311522	.313266	.314923	.316498	77
76	.303651	.305755	.307761	.309674	.311496	.313231	.314878	.316441	76
75	.303643	.305742	.307742	.309646	.311460	.313184	.314817	.316367	75
74	1.303629	1.305722	1.307713	1.309608	1.311410	1.313120	1.314739	1.316271	74
73	.303607	.305692	.307673	.309556	.311343	.313038	.314638	.316150	73
72	.303575	.305649	.307618	.309486	.311257	.312932	.314511	.316000	72
71	.303531	.305591	.307544	.309395	.311145	.312799	.314354	.315819	71
70	.303470	.305514	.307448	.309277	.311005	.312634	.314163	.315601	70
69	1.303388	1.305413	1.307325	1.309130	1.310832	1.312434	1.313934	1.315342	69
68	.303282	.305283	.307170	.308948	.310621	.312193	.313662	.315038	68
67	.303146	.305120	.306979	.308727	.310368	.311906	.313343	.314685	67
66	.302975	.304919	.306746	.308460	.310067	.311571	.312972	.314279	66
65	.302763	.304674	.306466	.308144	.309714	.311181	.312545	.313814	65
64	1.302505	1.304379	1.306133	1.307773	1.309305	1.310732	1.312058	1.313289	64
63	.302195	.304029	.305743	.307342	.308833	.310220	.311506	.312699	63
62	.301827	.303619	.305290	.306846	.308295	.309640	.310885	.312039	62
61	.301395	.303142	.304768	.306279	.307685	.308987	.310191	.311305	61
60	.300893	.302593	.304172	.305638	.306998	.308258	.309420	.310494	60
59	1.300315	1.301966	1.303497	1.304916	1.306231	1.307447	1.308567	1.309601	59
58	.299655	.301255	.302737	.304109	.305378	.306550	.307628	.308622	58
57	.298907	.300456	.301888	.303211	.304435	.305562	.306599	.307554	57
56	.298066	.299563	.300944	.302219	.303395	.304480	.305475	.306391	56
55	.297125	.298568	.299898	.301125	.302256	.303298	.304252	.305130	55
54	1.296078	1.297469	1.298748	1.299926	1.301012	1.302010	1.302926	1.303765	54
53	.294920	.296257	.297486	.298617	.299658	.300614	.301489	.302293	53
52	.293644	.294928	.296107	.297191	.298188	.299103	.299939	.300707	52
51	.292245	.293476	.294606	.295643	.296597	.297472	.298270	.299003	51
50	.290715	.291895	.292976	.293968	.294879	.295714	.296476	.297176	50
49	1.289049	1.290178	1.291211	1.292159	1.293029	1.293825	1.294552	1.295218	49
48	.287239	.288318	.289304	.290209	.291038	.291798	.292490	.293124	48
47	.285278	.286309	.287250	.288112	.288903	.289626	.290285	.290888	47
46	.283160	.284142	.285039	.285861	.286613	.287302	.287928	.288502	46
45	.280875	.281811	.282666	.283446	.284163	.284817	.285413	.285958	45
	17	16	15	14	13	12	11	10	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

The first Value under the Age x is $\lambda(1+a_x)$ for the whole Life. $4\frac{1}{2}$ PER CENT.

Pay-ments. n.	$x=10$	11	12	13	14	15	16	17	Pay-ments. n.
	1.281791	1.280417	1.278977	1.277464	1.275875	1.274211	1.272467	1.270632	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.290199	.290194	.290191	.290187	.290180	.290174	.290170	.290163	2
3	.455548	.455540	.455533	.455523	.455510	.455500	.455490	.455475	3
4	.569836	.569823	.569811	.569796	.569778	.569762	.569745	.569723	4
5	0.656184	0.656166	0.656149	0.656129	0.656106	0.656083	0.656060	0.656031	5
6	.724891	.724869	.724847	.724822	.724792	.724764	.724734	.724696	6
7	.781454	.781427	.781400	.781369	.781333	.781299	.781260	.781213	7
8	.829151	.829119	.829087	.829049	.829008	.828964	.828918	.828863	8
9	.870097	.870061	.870022	.869979	.869929	.869879	.869825	.869761	9
10	0.905737	0.905694	0.905650	0.905600	0.905544	0.905486	0.905423	0.905350	10
11	.937099	.937051	.937001	.936944	.936880	.936814	.936742	.936657	11
12	.964945	.964891	.964834	.964770	.964699	.964624	.964542	.964448	12
13	.989852	.989792	.989728	.989657	.989577	.989493	.989401	.989296	13
14	1.012269	1.012202	1.012131	1.012052	1.011963	1.011870	1.011767	1.011651	14
15	1.032550	1.032477	1.032398	1.032310	1.032214	1.032109	1.031996	1.031867	15
16	.050984	.050902	.050815	.050721	.050612	.050498	.050374	.050235	16
17	.067801	.067712	.067620	.067513	.067396	.067271	.067137	.066984	17
18	.083199	.083105	.083000	.082885	.082758	.082624	.082476	.082306	18
19	.097341	.097235	.097123	.096998	.096862	.096715	.096551	.096368	19
20	1.110358	1.110246	1.110124	1.109991	1.109842	1.109680	1.109504	1.109307	20
21	.122374	.122252	.122123	.121978	.121815	.121641	.121451	.121239	21
22	.133486	.133357	.133216	.133057	.132884	.132696	.132493	.132263	22
23	.143783	.143643	.143489	.143322	.143134	.142935	.142713	.142466	23
24	.153339	.153186	.153024	.152842	.152644	.152427	.152190	.151925	24
25	1.162219	1.162058	1.161882	1.161690	1.161476	1.161243	1.160989	1.160705	25
26	.170486	.170312	.170127	.169919	.169689	.169441	.169169	.168867	26
27	.178187	.178005	.177804	.177582	.177338	.177072	.176783	.176459	27
28	.185374	.185177	.184962	.184727	.184465	.184183	.183874	.183528	28
29	.192081	.191871	.191644	.191392	.191115	.190814	.190483	.190119	29
30	1.198348	1.198126	1.197884	1.197617	1.197322	1.197000	1.196653	1.196259	30
31	.204210	.203974	.203716	.203433	.203118	.202781	.202404	.201993	31
32	.209695	.209443	.209171	.208868	.208539	.208174	.207780	.207340	32
33	.214828	.214564	.214272	.213955	.213600	.213219	.212798	.212332	33
34	.219639	.219355	.219050	.218709	.218339	.217932	.217486	.216993	34
35	1.224142	1.223846	1.223519	1.223163	1.222768	1.222337	1.221866	1.221347	35
36	.228367	.228049	.227708	.227329	.226910	.226455	.225960	.225410	36
37	.232323	.231991	.231629	.231226	.230785	.230308	.229782	.229201	37
38	.236034	.235684	.235298	.234875	.234412	.233905	.233351	.232739	38
39	.239513	.239141	.238735	.238291	.237800	.237267	.236684	.236038	39
40	1.242772	1.242380	1.241955	1.241485	1.240969	1.240408	1.239792	1.239114	40
41	.245827	.245417	.244966	.244473	.243930	.243338	.242691	.241977	41
42	.248692	.248257	.247785	.247265	.246693	.246072	.245391	.244640	42
43	.251372	.250917	.250420	.249872	.249273	.248619	.247903	.247117	43
44	.253883	.253405	.252881	.252308	.251677	.250990	.250240	.249414	44
	10	11	12	13	14	15	16	17	

FORMULA, $\lambda(1 + {}_{n-1}) = \lambda\dfrac{N_x - N_{x+n}}{D_x} = \lambda\dfrac{a^n_{x-1}}{v p_{x-1}}.$

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4½ PER CENT.

Pay-ments. n.	x=18	19	20	21	22	23	24	25	Pay-ments. n.
	1.268708	1.266691	1.264573	1.262353	1.260026	1.257585	1.255025	1.252341	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.290155	.290148	.290139	.290129	.290119	.290107	.290094	.290081	2
3	.455460	.455445	.455426	.455406	.455385	.455361	.455335	.455306	3
4	.569701	.569677	.569647	.569617	.569584	.569547	.569506	.569462	4
5	0.655999	0.655965	0.655926	0.655884	0.655840	0.655789	0.655733	0.655673	5
6	.724655	.724612	.724562	.724509	.724452	.724387	.724316	.724239	6
7	.781164	.781111	.781050	.780984	.780914	.780835	.780748	.780653	7
8	.828805	.828741	.828668	.828590	.828506	.828411	.828307	.828194	8
9	.869692	.869617	.869532	.869441	.869342	.869231	.869110	.868976	9
10	0.905269	0.905182	0.905086	0.904980	0.904866	0.904739	0.904598	0.904444	10
11	.936567	.936469	.936358	.936238	.936109	.935963	.935802	.935627	11
12	.964346	.964234	.964110	.963976	.963828	.963663	.963483	.963285	12
13	.989182	.989057	.988920	.988768	.988602	.988418	.988217	.987997	13
14	1.011523	1.011387	1.011233	1.011063	1.010880	1.010676	1.010453	1.010207	14
15	1.031729	.031577	1.031404	1.031219	1.031017	1.030792	1.030544	1.030273	15
16	.050082	.049911	.049724	.049521	.049298	.049051	.048779	.048481	16
17	.066813	.066629	.066425	.066202	.065958	.065687	.065391	.065065	17
18	.082122	.081922	.081699	.081456	.081189	.080896	.080572	.080217	18
19	.096170	.095952	.095710	.095445	.095157	.094836	.094486	.094102	19
20	1.109092	1.108856	1.108593	1.108308	1.107993	1.107649	1.107270	1.106852	20
21	.121006	.120759	.120468	.120157	.119821	.119449	.119037	.118586	21
22	.132011	.131737	.131430	.131099	.130736	.130332	.129891	.129406	22
23	.142196	.141899	.141573	.141217	.140823	.140392	.139917	.139397	23
24	.151634	.151318	.150968	.150583	.150164	.149700	.149192	.148633	24
25	1.160396	1.160056	1.159680	1.159270	1.158819	1.158325	1.157780	1.157181	25
26	.168535	.168171	.167771	.167331	.166852	.166321	.165738	.165099	26
27	.176104	.175718	.175288	.174822	.174308	.173741	.173120	.172441	27
28	.183153	.182737	.182283	.181783	.181235	.180633	.179973	.179247	28
29	.189714	.189277	.188791	.188258	.187676	.187037	.186333	.185563	29
30	1.195835	1.195367	1.194849	1.194284	1.193668	1.192987	1.192240	1.191422	30
31	.201539	.201041	.200493	.199896	.199239	.198517	.197725	.196859	31
32	.206858	.206332	.205753	.205118	.204421	.203656	.202820	.201900	32
33	.211823	.211266	.210652	.209978	.209241	.208434	.207546	.206577	33
34	.216456	.215865	.215214	.214503	.213726	.212870	.211935	.210909	34
35	1.220777	1.220152	1.219465	1.218714	1.217892	1.216991	1.216002	1.214921	35
36	.224807	.224148	.223423	.222631	.221765	.220810	.219771	.218631	36
37	.228566	.227870	.227107	.226272	.225356	.224355	.223258	.222059	37
38	.232069	.231337	.230532	.229651	.228690	.227635	.226482	.225222	38
39	.235334	.234563	.233714	.232789	.231777	.230669	.229458	.228136	39
40	1.238372	1.237559	1.236669	1.235696	1.234634	1.233471	1.232201	1.230815	40
41	.241196	.240344	.239408	.238388	.237273	.236054	.234723	.233272	41
42	.243822	.242926	.241946	.240875	.239707	.238430	.237037	.235520	42
43	.246257	.245319	.244290	.243169	.241946	.240610	.239156	.237571	43
44	.248515	.247530	.246454	.245280	.244002	.242608	.241088	.239436	44
	18	19	20	21	22	23	24	25	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n
ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

$4\frac{1}{2}$ PER CENT.

Payments. n.	26	27	28	29	30	31	32	33	Payments. n.
	1.249527	1.246580	1.243489	1.240250	1.236862	1.233310	1.229589	1.225692	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.290064	.290047	.290029	.290005	.289984	.289960	.289933	.289902	2
3	.455272	.455239	.455200	.455154	.455111	.455060	.455003	.454942	3
4	.569412	.569360	.569299	.569232	.569163	.569084	.568999	.568902	4
5	0.655606	0.655533	0.655452	0.655360	0.655265	0.655159	0.655039	0.654910	5
6	.724152	.724060	.723955	.723838	.723718	.723578	.723428	.723261	6
7	.780547	.780431	.780303	.780162	.780009	.779842	.779656	.779452	7
8	.828066	.827929	.827777	.827605	.827427	.827224	.827003	.826758	8
9	.868827	.868667	.868486	.868290	.868077	.867843	.867582	.867296	9
10	0.904273	0.904086	0.903882	0.903653	0.903410	0.903137	0.902838	0.902507	10
11	.935431	.935221	.934987	.934729	.934449	.934140	.933798	.933423	11
12	.963067	.962828	.962565	.962273	.961958	.961609	.961225	.960801	12
13	.987751	.987485	.987190	.986864	.986512	.986122	.985691	.985221	13
14	1.009935	1.009639	1.009312	1.008950	1.008560	1.008125	1.007650	1.007127	14
15	1.029973	1.029647	1.029285	1.028888	1.028454	1.027977	1.027452	1.026874	15
16	.048152	.047793	.047398	.046958	.046485	.045961	.045384	.044750	16
17	.064705	.064314	.063878	.063401	.062883	.062309	.061679	.060985	17
18	.079827	.079397	.078926	.078406	.077841	.077217	.076529	.075775	18
19	.093675	.093211	.092699	.092135	.091522	.090843	.090099	.089281	19
20	1.106391	1.105889	1.105335	1.104725	1.104060	1.103327	1.102522	1.101637	20
21	.118090	.117548	.116950	.116291	.115574	.114785	.113915	.112964	21
22	.128872	.128288	.127644	.126935	.126165	.125313	.124382	.123356	22
23	.138823	.138195	.137503	.136744	.135915	.135004	.134001	.132903	23
24	.148018	.147344	.146605	.145789	.144904	.143925	.142855	.141679	24
25	1.156522	1.155804	1.155011	1.154142	1.153192	1.152150	1.151004	1.149749	25
26	.164398	.163628	.162784	.161854	.160844	.159730	.158510	.157172	26
27	.171690	.170873	.169970	.168983	.167905	.166720	.165422	.163999	27
28	.178451	.177578	.176621	.175569	.174424	.173165	.171785	.170274	28
29	.184715	.183790	.182772	.181657	.180440	.179104	.177641	.176040	29
30	1.190524	1.189540	1.188463	1.187279	1.185990	1.184574	1.183026	1.181332	30
31	.195905	.194866	.193723	.192471	.191105	.189609	.187973	.186184	31
32	.200894	.199792	.198584	.197259	.195818	.194238	.192512	.190625	32
33	.205511	.204348	.203071	.201674	.200153	.198489	.196669	.194684	33
34	.209785	.208556	.207211	.205738	.204137	.202384	.200471	.198385	34
35	1.213735	1.212440	1.211023	1.209475	1.207790	1.205948	1.203940	1.201749	35
36	.217382	.216020	.214532	.212904	.211134	.209202	.207094	.204803	36
37	.220746	.219316	.217752	.216043	.214189	.212162	.209959	.207560	37
38	.223844	.222343	.220702	.218913	.216968	.214851	.212540	.210046	38
39	.226691	.225117	.223399	.221525	.219495	.217275	.214880	.212273	39
40	1.229301	1.227653	1.225856	1.223900	1.221773	1.219474	1.216972	1.214262	40
41	.231688	.229966	.228090	.226043	.223840	.221440	.218840	.216027	41
42	.233865	.232068	.230107	.227987	.225689	.223196	.220500	.217586	42
43	.235845	.233967	.231936	.229727	.227341	.224757	.221965	.218952	43
44	.237634	.235690	.233575	.231282	.228809	.226135	.223249	.220140	44
	26	27	28	29	30	31	32	33	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

$4\frac{1}{2}$ PER CENT.

Pay-ments. $n.$	$x=34$ 1.221612	35 1.217341	36 1.212877	37 1.208201	38 1.203309	39 1.198189	40 1.192839	41 1.187248	Pay-ments. $n.$
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289869	.289829	.289792	.289749	.289699	.289644	.289585	.289524	2
3	.454871	.454795	.454715	.454627	.454525	.454414	.454295	.454164	3
4	.568797	.568679	.568557	.568419	.568263	.568095	.567910	.567709	4
5	0.654765	0.654607	0.654438	0.654249	0.654038	0.653808	0.653556	0.653281	5
6	.723078	.722875	.722658	.722416	.722146	.721852	.721530	.721178	6
7	.779226	.778977	.778710	.778412	.778081	.777721	.777325	.776892	7
8	.826489	.826192	.825872	.825516	.825123	.824691	.824218	.823701	8
9	.866980	.866634	.866258	.865844	.865382	.864877	.864325	.863717	9
10	0.902145	0.901745	0.901314	0.900835	0.900303	0.899723	0.899084	0.898388	10
11	.933010	.932558	.932065	.931518	.930915	.930253	.929530	.928738	11
12	.960338	.959827	.959270	.958656	.957975	.957233	.956419	.955525	12
13	.984702	.984130	.983509	.982821	.982064	.981235	.980325	.979329	13
14	1.006550	1.005917	1.005226	1.004465	1.003625	1.002706	1.001698	1.000592	14
15	1.026239	1.025539	1.024779	1.023939	1.023014	1.022001	1.020890	1.019673	15
16	.044051	.043286	.042450	.041530	.040516	.039405	.038187	.036854	16
17	.060224	.059387	.058475	.057470	.056362	.055150	.053823	.052366	17
18	.074947	.074037	.073045	.071951	.070747	.069432	.067987	.066407	18
19	.088382	.087397	.086320	.085135	.083834	.082406	.080844	.079135	19
20	1.100668	1.099602	1.098438	1.097161	1.095753	1.094215	1.092530	1.090686	20
21	.111917	.110769	.109518	.108140	.106626	.104971	.103159	.101175	21
22	.122232	.121000	.119654	.118175	.116551	.114775	.112830	.110708	22
23	.131699	.130377	.128935	.127351	.125612	.123711	.121635	.119364	23
24	.140390	.138977	.137436	.135743	.133886	.131860	.129643	.127224	24
25	1.148374	1.146867	1.145221	1.143417	1.141441	1.139282	1.136925	1.134351	25
26	.155707	.154101	.152351	.150434	.148332	.146040	.143535	.140805	26
27	.162440	.160735	.158877	.156840	.154613	.152181	.149530	.146642	27
28	.168621	.166813	.164842	.162687	.160327	.157756	.154955	.151907	28
29	.174289	.172375	.170291	.168011	.165519	.162806	.159854	.156641	29
30	1.179481	1.177459	1.175258	1.172852	1.170225	1.167370	1.164262	1.160891	30
31	.184230	.182098	.179777	.177243	.174483	.171480	.168222	.164682	31
32	.188567	.186321	.183879	.181220	.178318	.175174	.171756	.168056	32
33	.192519	.190158	.187597	.184803	.181768	.178472	.174904	.171042	33
34	.196110	.193636	.190948	.188028	.184851	.181412	.177691	.173673	34
35	1.199368	1.196774	1.193966	1.190912	1.187599	1.184017	1.180148	1.175973	35
36	.202308	.199601	.196666	.193483	.190035	.186313	.182297	.177971	36
37	.204958	.202131	.199075	.195764	.192183	.188323	.184163	.179690	37
38	.207330	.204389	.201212	.197775	.194065	.190068	.185770	.181162	38
39	.209449	.206393	.203096	.199538	.195698	.191571	.187146	.182407	39
40	1.211329	1.208160	1.204749	1.201068	1.197106	1.192859	1.188311	1.183447	40
41	.212988	.209710	.206183	.202387	.198311	.193949	.189283	.184307	41
42	.214443	.211056	.207420	.203517	.199333	.194860	.190088	.185011	42
43	.215707	.212218	.208481	.204475	.200186	.195613	.190746	.185576	43
44	.216799	.213213	.209379	.205275	.200892	.196229	.191275	.186022	44
	34	35	36	37	38	39	40	41	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

4½ PER CENT.

Pay-ments.	42	43	44	45	46	47	48	49	Pay-ments.
n.	1.181397	1.175290	1.168905	1.162240	1.155279	1.148013	1.140432	1.132524	n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289449	.289373	.289286	.289192	.289088	.288973	.288847	.288710	2
3	.454015	.453858	.453681	.453487	.453275	.453040	.452784	.452501	3
4	.567483	.567240	.566968	.566672	.566344	.565986	.565592	.565158	4
5	0.652973	0.652640	0.652271	0.651865	0.651421	0.650931	0.650393	0.649804	5
6	.720784	.720358	.719885	.719369	.718799	.718173	.717488	.716733	6
7	.776409	.775885	.775307	.774671	.773972	.773206	.772363	.771439	7
8	.823124	.822501	.821809	.821051	.820219	.819303	.818300	.817198	8
9	.863047	.862316	.861507	.860623	.859649	.858581	.857409	.856121	9
10	0.897616	0.896773	0.895845	0.894825	0.893707	0.892480	0.891131	0.889653	10
11	.927859	.926903	.925846	.924690	.923421	.922025	.920497	.918819	11
12	.954538	.953460	.952274	.950975	.949545	.947980	.946262	.944379	12
13	.978226	.977025	.975703	.974251	.972661	.970916	.969003	.966906	13
14	.999373	.998042	.996575	.994972	.993212	.991281	.989166	.986851	14
15	1.018330	1.016862	1.015252	1.013488	1.011551	1.009429	1.007108	1.004566	15
16	.035381	.033778	.032014	.030082	.027964	.025648	.023112	.020338	16
17	.050764	.049016	.047094	.044990	.042689	.040168	.037413	.034397	17
18	.064668	.062770	.060685	.058408	.055912	.053185	.050201	.046944	18
19	.077254	.075201	.072953	.070491	.067800	.064857	.061645	.058136	19
20	1.088658	1.086451	1.084027	1.081380	1.078486	1.075327	1.071877	1.068119	20
21	.099001	.096628	.094029	.091190	.088092	.084708	.081023	.077005	21
22	.108377	.105838	.103057	.100025	.096714	.093108	.089178	.084904	22
23	.116876	.114165	.111201	.107969	.104448	.100610	.096439	.091903	23
24	.124573	.121688	.118536	.115104	.111365	.107301	.102882	.098085	24
25	1.131535	1.128473	1.125132	1.121495	1.117542	1.113243	1.108579	1.103526	25
26	.137823	.134581	.131047	.127208	.123033	.118504	.113598	.108290	26
27	.143489	.140065	.136340	.132291	.127900	.123143	.117998	.112438	27
28	.148581	.144978	.141054	.136802	.132195	.127213	.121831	.116027	28
29	.153147	.149356	.145240	.140784	.135967	.130761	.125150	.119106	29
30	1.157219	1.153246	1.148938	1.144285	1.139256	1.133836	1.127999	1.121733	30
31	.160839	.156685	.152192	.147339	.142108	.136476	.130431	.123949	31
32	.164042	.159713	.155031	.149988	.144558	.138731	.132484	.125799	32
33	.166863	.162356	.157496	.152266	.146652	.140635	.134197	.127326	33
34	.169327	.164652	.159615	.154212	.148421	.142224	.135612	.128572	34
35	1.171468	1.166626	1.161427	1.155857	1.149897	1.143537	1.136767	1.129572	35
36	.173309	.168315	.162959	.157230	.151117	.144609	.137694	.130360	36
37	.174885	.169743	.164237	.158365	.152114	.145471	.138425	.130975	37
38	.176217	.170935	.165295	.159294	.152915	.146149	.138995	.131442	38
39	.177330	.171922	.166160	.160039	.153545	.146678	.139428	.131789	39
40	1.178251	1.172728	1.166854	1.160625	1.154037	1.147080	1.139750	1.132039	40
41	.179004	.173376	.167401	.161083	.154411	.147380	.139982	.132219	41
42	.179609	.173886	.167827	.161432	.154690	.147595	.140149	.132342	42
43	.180086	.174284	.168153	.161691	.154890	.147750	.140263	.132419	43
44	.180457	.174588	.168394	.161877	.155034	.147856	.140335	.132467	44
	42	43	44	45	46	47	48	49	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

$4\frac{1}{2}$ PER CENT.

Payments. n.	$x=50$	51	52	53	54	55	56	57	Payments. n.
	1.124274	1.115680	1.106723	1.097392	1.087676	1.077558	1.067037	1.056095	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.288556	.288390	.288206	.288005	.287785	.287538	.287272	.286974	2
3	.452188	.451848	.451473	.451062	.450610	.450110	.449562	.448958	3
4	.564681	.564158	.563584	.562954	.562262	.561495	.560657	.559736	4
5	0.649153	0.648441	0.647660	0.646801	0.645857	0.644815	0.643677	0.642425	5
6	.715902	.714995	.713995	.712899	.711694	.710368	.708916	.707320	6
7	.770422	.769307	.768083	.766740	.765266	.763642	.761866	.759916	7
8	.815985	.814658	.813200	.811601	.809846	.807916	.805805	.803489	8
9	.854707	.853158	.851458	.849594	.847549	.845302	.842846	.840152	9
10	0.888028	0.886250	0.884299	0.882161	0.879816	0.877243	0.874430	0.871348	10
11	.916977	.914961	.912751	.910330	.907677	.904767	.901588	.898107	11
12	.942311	.940051	.937573	.934860	.931889	.928634	.925079	.921195	12
13	.964608	.962094	.959341	.956327	.953031	.949422	.945488	.941187	13
14	.984313	.981539	.978501	.975182	.971551	.967585	.963259	.958538	14
15	1.001782	0.998739	0.995413	0.991777	0.987811	0.983476	0.978755	0.973610	15
16	.017299	1.013984	1.010359	1.006408	1.002094	.997388	.992268	.986694	16
17	.031102	.027505	.023584	.019304	.014642	1.009560	1.004038	.998040	17
18	.043382	.039506	.035274	.030668	.025652	.020193	.014273	1.007849	18
19	.054311	.050142	.045603	.040663	.035293	.029461	.023143	.016300	19
20	1.064019	1.059560	1.054708	1.049435	1.043715	1.037510	1.030799	1.023545	20
21	.072632	.067879	.062713	.057113	.051043	.044470	.037375	.029718	21
22	.080253	.075205	.069732	.063803	.057388	.050456	.042984	.034942	22
23	.086975	.081638	.075856	.069604	.062853	.055568	.047738	.039328	23
24	.092885	.087257	.081173	.074606	.067525	.059906	.051733	.042973	24
25	1.098053	1.092142	1.085762	1.078886	1.071493	1.063554	1.055055	1.045971	25
26	.102550	.096362	.089692	.082525	.074833	.066590	.057791	.048407	26
27	.106438	.099978	.093036	.085590	.077614	.069092	.060014	.050357	27
28	.109772	.103058	.095855	.088143	.079907	.071126	.061794	.051896	28
29	.112614	.105655	.098204	.090249	.081772	.072756	.063200	.053089	29
30	1.115011	1.107820	1.100142	1.091963	1.083268	1.074042	1.064290	1.053994	30
31	.117011	.109607	.101720	.093338	.084448	.075041	.065117	.054670	31
32	.118661	.111063	.102987	.094423	.085365	.075798	.065735	.055158	32
33	.120007	.112232	.103986	.095266	.086060	.076364	.066181	.055506	33
34	.121087	.113154	.104763	.095906	.086579	.076773	.066499	.055742	34
35	1.121939	1.113871	1.105353	1.096383	1.086955	1.077064	1.066714	1.055891	35
36	.122602	.114416	.105792	.096729	.087222	.077261	.066851	.055985	36
37	.123106	.114821	.106111	.096975	.087403	.077387	.066937	.056038	37
38	.123481	.115115	.106338	.097141	.087519	.077466	.066986	.056069	38
39	.123752	.115325	.106491	.097248	.087591	.077511	.067014	.056082	39
40	1.123946	1.115467	1.106589	1.097314	1.087633	1.077536	1.067026	1.056091	40
41	.124078	.115557	.106650	.097353	.087656	.077547	.067034	.056094	41
42	.124161	.115613	.106686	.097374	.087666	.077555	.067037	.056094	42
43	.124213	.115646	.106706	.097383	.087673	.077557	.067037	.056095	43
44	.124244	.115665	.106714	.097389	.087675	.077557	.067037		44
45	1.124261	1.115672	1.106720	1.097390	1.087675	1.077558			45
46	.124268	.115678	.106721	.097391					46
47	.124273	.115679	.106722						47
48	.124274	.115679							48
49	.124274								49
	50	51	52	53	54	55	56	57	

TABLE XLV.

*67

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. $4\frac{1}{2}$ PER CENT.

Pay-ments. n.	58	59	60	61	62	63	64	65	Pay-ments. n.
	1.044728	1.032915	1.020646	1.007916	0.994716	0.981025	0.966846	0.952166	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.286652	.286298	.285906	.285476	.285008	.284488	.283919	.283293	2
3	.448302	.447578	.446779	.445905	.444948	.443891	.442734	.441463	3
4	.558730	.557622	.556403	.555067	.553605	.551993	.550229	.548291	4
5	0.641055	0.639550	0.637896	0.636084	0.634099	0.631916	0.629525	0.626906	5
6	.705576	.703660	.701557	.699252	.696730	.693958	.690928	.687611	6
7	.757784	.755444	.752876	.750067	.746991	.743619	.739934	.735903	7
8	.800957	.798179	.795136	.791806	.788167	.784181	.779828	.775073	8
9	.837207	.833982	.830450	.826591	.822376	.817764	.812734	.807248	9
10	0.867981	0.864297	0.860267	0.855867	0.851067	0.845822	0.840110	0.833891	10
11	.894310	.890158	.885620	.880672	.875279	.869397	.863002	.856049	11
12	.916957	.912327	.907277	.901773	.895785	.889266	.882188	.874509	12
13	.936501	.931391	.925819	.919761	.913178	.906024	.898272	.889876	13
14	.953401	.947802	.941713	.935098	.927923	.920143	.911726	.902632	14
15	0.968015	0.961932	0.955322	0.948156	0.940400	0.932002	0.922939	0.913173	15
16	.980646	.974076	.966953	.959245	.950914	.941918	.932235	.921823	16
17	.991536	.984488	.976859	.968617	.959731	.950161	.939883	.928862	17
18	1.000898	.993377	.985252	.976495	.967078	.956958	.946119	.934533	18
19	.008908	1.000926	.992321	.983072	.973146	.962510	.951152	.939045	19
20	1.015723	1.007294	0.998233	0.988513	0.978111	0.966998	0.955160	0.942585	20
21	.021481	.012629	1.003131	.992971	.982129	.970575	.958310	.945317	21
22	.026311	.017054	.007148	.996582	.985335	.973388	.960742	.947387	22
23	.030321	.020686	.010405	.999466	.987858	.975563	.962586	.948926	23
24	.033616	.023634	.013009	1.001737	.989810	.977212	.963958	.950040	24
25	1.036292	1.025991	1.015060	1.003495	0.991290	0.978440	0.964950	0.950829	25
26	.038433	.027859	.016649	.004829	.992393	.979328	.965654	.951364	26
27	.040122	.029290	.017854	.005822	.993191	.979957	.966131	.951703	27
28	.041431	.030382	.018752	.006542	.993756	.980385	.966433	.951914	28
29	.042424	.031197	.019403	.007051	.994140	.980655	.966622	.952037	29
30	1.043165	1.031787	1.019863	1.007398	0.994383	0.980825	0.966731	0.952105	30
31	.043701	.032205	.020178	.007616	.994536	.980922	.966792	.952138	31
32	.044082	.032489	.020375	.007754	.994623	.980977	.966821	.952155	32
33	.044340	.032669	.020500	.007833	.994672	.981003	.966836	.952163	33
34	.044504	.032782	.020571	.007877	.994696	.981016	.966843	.952165	34
35	1.044607	1.032847	1.020611	1.007899	0.994707	0.981023	0.966845	0.952166	35
36	.044666	.032883	.020630	.007909	.994714	.981024	.966846		
37	.044699	.032900	.020640	.007915	.994714	.981025		**42**	
38	.044714	.032909	.020645	.007915	.994716		**43**	1.181397	58
39	.044723	.032914	.020645	.007916		**44**	1.175290	.181395	57
40	1.044727	1.032914	1.020646		**45**	1.168905	.175289	.181395	56
41	.044727	.032915		**46**	1.162240	.168905	.175289	.181395	55
42	.044728		**47**	1.155279	1.162239	1.168905	1.175288	1.181393	54
	49	**48**	1.148013	.155278	.162239	.168904	.175286	.181389	53
		1.140432	.148012	.155278	.162238	.168902	.175282	.181380	52
51	1.132524	.140431	.148012	.155277	.162235	.168897	.175272	.181362	51
50	.132523	.140431	.148011	.155273	.162230	.168886	.175253	.181334	50
49	1.132523	1.140430	1.148007	1.155268	1.162218	1.168866	1.175223	1.181287	49
48	.132522	.140426	.148002	.155255	.162197	.168834	.175173	.181211	48
47	.132518	.140420	.147988	.155233	.162162	.168780	.175091	.181102	47
46	.132511	.140405	.147964	.155195	.162104	.168692	.174975	.180951	46
45	.132495	.140379	.147923	.155133	.162011	.168568	.174813	.180741	45
	49	48	47	46	45	44	43	42	

LIFE AND TEMPORARY ANNUITIES.　LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. $4\frac{1}{2}$ PER CENT.

Pay-ments. n.	$x=66$ 0.936983	67 0.921279	68 0.905066	69 0.888311	70 0.871044	71 0.853238	72 0.834905	73 0.816036	Pay-ments. n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.282611	.281852	.281035	.280120	.279130	.278037	.276843	.275538	2
3	.440070	.438541	.436872	.435027	.433019	.430811	.428403	.425760	3
4	.546174	.543847	.541309	.538512	.535465	.532128	.528482	.524492	4
5	0.624044	0.620902	0.617476	0.613710	0.609614	0.605131	0.600238	0.594904	5
6	.683985	.680015	.675686	.670944	.665786	.660148	.654017	.647340	6
7	.731504	.726692	.721455	.715727	.709502	.702722	.695357	.687355	7
8	.769890	.764233	.758081	.751367	.744086	.736172	.727594	.718300	8
9	.801278	.794771	.787707	.780017	.771693	.762667	.752909	.742371	9
10	0.827131	0.819779	0.811813	0.803163	0.793818	0.783714	0.772824	0.761101	10
11	.848506	.840319	.831469	.821880	.811550	.800415	.788450	.775614	11
12	.866193	.857190	.847477	.836986	.825715	.813603	.800634	.786774	12
13	.880805	.871009	.860468	.849118	.836958	.823938	.810047	.795255	13
14	.892832	.882275	.870947	.858787	.845804	.831952	.817225	.801609	14
15	0.902672	0.891393	0.879328	0.866419	0.852685	0.838081	0.822618	0.806288	15
16	.910659	.898708	.885960	.872370	.857958	.842695	.826596	.809660	16
17	.917083	.904508	.891141	.876940	.861935	.846104	.829467	.812031	17
18	.922185	.909047	.895127	.880391	.864877	.848567	.831487	.813631	18
19	.926183	.912543	.898140	.882946	.867004	.850301	.832852	.814656	19
20	0.929266	0.915188	0.900372	0.884796	0.868504	0.851473	0.833726	0.815284	20
21	.931600	.917150	.901990	.886101	.869518	.852224	.834262	.815650	21
22	.933334	.918572	.903132	.886983	.870167	.852685	.834575	.815852	22
23	.934590	.919577	.903904	.887547	.870566	.852955	.834747	.815954	23
24	.935478	.920257	.904397	.887895	.870799	.853102	.834834	.816005	24
25	0.936080	0.920690	0.904702	0.888097	0.870927	0.853177	0.834877	0.816025	25
26	.936462	.920959	.904879	.888209	.870991	.853213	.834895	.816034	26
27	.936700	.921115	.904977	.888264	.871023	.853229	.834902	.816036	27
28	.936838	.921201	.905025	.888293	.871036	.853235	.834905		
29	.936914	.921243	.905050	.888304	.871042	.853238		**34**	
30	0.936951	0.921265	0.905060	0.888309	0.871044		**35**	1.221612	66
31	.936971	.921274	.905065	.888311		**36**	1.217341	.221612	65
32	.936979	.921278	.905066		**37**	1.212877	1.217340	1.221612	64
33	.936982	.921279		**38**	1.208201	.212875	.217340	.221611	63
34	.936983		**39**	1.203309	.208199	.212875	.217339	.221610	62
	41	**40**	1.198189	.203304	.208199	.212875	.217338	.221608	61
		1.192839	.198187	.203304	.208199	.212874	.217336	.221601	60
59	1.187248	1.192837	1.198187	1.203304	1.208198	1.212872	1.217329	1.221591	59
58	.187246	.192837	.198187	.203303	.208196	.212864	.217318	.221575	58
57	.187246	.192837	.198186	.203301	.208188	.212852	.217301	.221547	57
56	.187246	.192835	.198184	.203292	.208175	.212834	.217271	.221502	56
55	.187244	.192833	.198175	.203278	.208156	.212802	.217223	.221437	55
54	1.187241	1.192824	1.198160	1.203258	1.208122	1.212751	1.217154	1.221346	54
53	.187232	.192808	.198138	.203222	.208068	.212677	.217058	.221221	53
52	.187215	.192784	.198099	.203164	.207989	.212575	.216925	.221051	52
51	.187189	.192743	.198037	.203080	.207880	.212434	.216744	.220829	51
50	.187145	.192677	.197948	.202964	.207730	.212241	.216508	.220545	50
49	1.187074	1.192581	1.197824	1.202804	1.207524	1.211989	1.216205	1.220184	49
48	.186972	.192449	.197653	.202584	.207256	.211667	.215821	.219736	48
47	.186831	.192266	.197419	.202299	.206913	.211259	.215345	.219187	47
46	.186635	.192017	.197115	.201933	.206478	.210751	.214761	.218526	46
45	.186369	.191692	.196724	.201469	.205937	.210130	.214056	.217733	45
	41	**40**	**39**	**38**	**37**	**36**	**35**	**34**	

TABLE XLV. *69

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. $4\frac{1}{2}$ PER CENT.

Pay-ments. $n.$	74	75	76	77	78	79	80	81	Pay-ments. $n.$
	0.796626	0.776711	0.756264	0.735279	0.713797	0.691797	0.669283	0.646255	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.274089	.272521	.270807	.268910	.266851	.264595	.262129	.259447	2
3	.422855	.419707	.416256	.412470	.408356	.403865	.398975	.393652	3
4	.520129	.515387	.510208	.504550	.498410	.491733	.484479	.476622	4
5	0.589077	0.582756	0.575872	0.568376	0.560266	0.551472	0.541963	0.531696	5
6	.640067	.632192	.623643	.614371	.604364	.593563	.581926	.569428	6
7	.678666	.669282	.659130	.648157	.636363	.623682	.610091	.595572	7
8	.708241	.697409	.685732	.673164	.659708	.645312	.629962	.613646	8
9	.731003	.718801	.705699	.691659	.676693	.660765	.643866	.626012	9
10	0.748499	0.735023	0.720614	0.705242	0.688938	0.671670	0.653455	0.634186	10
11	.761871	.747230	.731645	.715100	.697634	.679234	.659827	.639362	11
12	.771990	.756308	.739691	.722134	.703690	.684280	.663875	.642509	12
13	.779547	.762954	.745453	.727048	.707743	.687494	.666342	.644336	13
14	.785096	.767728	.749487	.730344	.710329	.689456	.667776	.645339	14
15	0.789090	0.771075	0.752198	0.732450	0.711910	0.690597	0.668563	0.645853	15
16	.791895	.773328	.753933	.733738	.712829	.691223	.668967	.646101	16
17	.793785	.774771	.754994	.734488	.713334	.691545	.669162	.646203	17
18	.794996	.775654	.755612	.734900	.713594	.691701	.669242	.646243	18
19	.795738	.776169	.755952	.735112	.713719	.691764	.669274	.646255	19
20	0.796170	0.776452	0.756126	0.735215	0.713770	0.691790	0.669283	26	
21	.796408	.776596	.756211	.735256	.713791	.691797			
22	.796529	.776668	.756245	.735273	.713797		27	1.249527	74
23	.796589	.776696	.756259	.735279		28	1.246580	.249527	73
24	.796613	.776708	.756264		29	1.243489	.246580	.249527	72
25	0.796623	0.776711	31	30	1.240250	.243489	.246580	.249527	71
26	.796626	32		1.236862	.240249	.243489	.246580	.249526	70
	33		1.233310	1.236861	1.240249	1.243489	1.246579	1.249524	69
		1.229589	.233309	.236861	.240249	.243488	.246577	.249519	68
67	1.225692	.229589	.233309	.236861	.240248	.243486	.246572	.249514	67
66	.225692	.229589	.233309	.236860	.240246	.243481	.246566	.249502	66
65	.225692	.229588	.233308	.236858	.240241	.243474	.246554	.249485	65
64	1.225691	1.229587	1.233306	1.236853	1.240233	1.243462	1.246536	1.249459	64
63	.225690	.229585	.233300	.236845	.240221	.243443	.246508	.249418	63
62	.225688	.229579	.233292	.236832	.240201	.243413	.246465	.249363	62
61	.225682	.229570	.233278	.236810	.240169	.243368	.246406	.249285	61
60	.225672	.229556	.233255	.236776	.240121	.243305	.246323	.249178	60
59	1.225657	1.229531	1.233218	1.236725	1.240054	1.243217	1.246211	1.249039	59
58	.225631	.229492	.233164	.236654	.239961	.243098	.246063	.248863	58
57	.225589	.229434	.233089	.236556	.239835	.242942	.245877	.248641	57
56	.225528	.229354	.232985	.236422	.239669	.242745	.245641	.248361	56
55	.225442	.229244	.232843	.236246	.239460	.242494	.245345	.248022	55
54	1.225325	1.229093	1.232656	1.236024	1.239194	1.242181	1.244985	1.247613	54
53	.225165	.228895	.232420	.235741	.238862	.241799	.244552	.247121	53
52	.224955	.228644	.232119	.235389	.238456	.241339	.244030	.246546	52
51	.224688	.228325	.231746	.234958	.237969	.240786	.243420	.245868	51
50	.224349	.227928	.231289	.234441	.237382	.240139	.242702	.245088	50
49	1.223928	1.227443	1.230740	1.233819	1.236695	1.239378	1.241875	1.244192	49
48	.223412	.226859	.230079	.233089	.235888	.238500	.240924	.243168	48
47	.222790	.226157	.229303	.232233	.234956	.237491	.239839	.242011	47
46	.222045	.225332	.228394	.231243	.233886	.236340	.238612	.240712	46
45	.221167	.224366	.227343	.230107	.232664	.235038	.237234	.239258	45
	33	32	31	30	29	28	27	26	

TABLE XLV.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. $4\frac{1}{2}$ PER CENT.

Pay-ments. n.	$x=82$	83	84	85	86	87	88	89	Pay-ments. n.
	0.622676	0.598565	0.573780	0.548297	0.521852	0.493999	0.464345	0.431342	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.256494	.253316	.249806	.246024	.241946	.237388	.232632	.224517	2
3	.387854	.381584	.374746	.367409	.359446	.350786	.340091	.324725	3
4	.468093	.458911	.448980	.438319	.426874	.413580	.397349	.376450	4
5	0.520618	0.508753	0.495976	0.482365	0.467218	0.449629	0.429089	0.404031	5
6	.556023	.541721	.526442	.509831	.491308	.470362	.446604	.418493	6
7	.580075	.563652	.545916	.526616	.505459	.482025	.455950	.425749	7
8	.596346	.577893	.557991	.536606	.513513	.488313	.460680	.429178	8
9	.607023	.586809	.565240	.542334	.517883	.491513	.462925	.430618	9
10	0.613752	0.592192	0.569416	0.545455	0.520115	0.493035	0.463870	0.431167	10
11	.617831	.595305	.571699	.547053	.521178	.493677	.464230	.431342	11
12	.620196	.597009	.572869	.547814	.521627	.493921	.464345		12
13	.621492	.597883	.573427	.548135	.521798	.493999		18	13
14	.622157	.598301	.573662	.548258	.521852		19	1.268708	82
15	0.622476	0.598476	0.573752	0.548297	21	20	1.266691	.268709	81
16	.622609	.598544	.573780			1.264573	.266692	.268709	80
17	.622661	.598565		22	1.262353	1.264574	.266692	.268709	79
18	.622676		23	1.260026	.262354	.264574	.266692	.268708	78
	25	24	1.257585	.260027	.262354	.264574	.266691	.268706	77
		1.255025	.257585	.260027	.262354	.264573	.266689	.268703	76
75	1.252341	.255025	.257585	.260027	.262353	.264571	.266686	.268699	75
74	1.252342	1.255025	1.257585	1.260026	1.262351	1.264567	1.266682	1.268692	74
73	.252342	.255025	.257584	.260024	.262347	.264563	.266674	.268681	73
72	.252342	.255024	.257582	.260020	.262343	.264555	.266663	.268665	72
71	.252341	.255022	.257578	.260016	.262334	.264543	.266646	.268639	71
70	.252339	.255017	.257574	.260006	.262322	.264525	.266618	.268603	70
69	1.252334	1.255013	1.257563	1.259993	1.262302	1.264496	1.266580	1.268554	69
68	.252329	.255002	.257549	.259972	.262271	.264456	.266528	.268487	68
67	.252318	.254987	.257527	.259940	.262229	.264400	.266457	.268398	67
66	.252302	.254964	.257493	.259896	.262170	.264325	.266363	.268285	66
65	.252277	.254928	.257447	.259833	.262091	.264226	.266244	.268144	65
64	1.252239	1.254879	1.257381	1.259749	1.261986	1.264100	1.266095	1.267966	64
63	.252187	.254809	.257291	.259638	.261853	.263943	.265907	.267749	63
62	.252113	.254714	.257174	.259498	.261687	.263744	.265677	.267490	62
61	.252012	.254590	.257026	.259322	.261477	.263501	.265404	.267178	61
60	.251881	.254433	.256839	.259100	.261220	.263212	.265074	.266812	60
59	1.251715	1.254235	1.256604	1.258828	1.260914	1.262863	1.264687	1.266381	59
58	.251505	.253986	.256317	.258504	.260545	.262454	.264231	.265885	58
57	.251241	.253683	.255973	.258113	.260112	.261972	.263707	.265319	57
56	.250921	.253319	.255560	.257655	.259602	.261418	.263108	.264670	56
55	.250535	.252881	.255075	.257116	.259016	.260784	.262422	.263936	55
54	1.250071	1.252368	1.254505	1.256496	1.258345	1.260058	1.261646	1.263114	54
53	.249528	.251764	.253848	.255785	.257577	.259238	.260776	.262195	53
52	.248888	.251068	.253095	.254972	.256709	.258317	.259805	.261172	52
51	.248152	.250271	.252235	.254054	.255736	.257290	.258722	.260045	51
50	.247307	.249360	.251262	.253023	.254648	.256143	.257529	.258799	50
49	1.246341	1.248329	1.250171	1.251871	1.253434	1.254881	1.256211	1.257433	49
48	.245249	.247174	.248950	.250586	.252097	.253486	.254765	.255935	48
47	.244024	.245880	.247589	.249170	.250620	.251955	.253180	.254304	47
46	.242653	.244437	.246089	.247605	.248998	.250276	.251452	.252529	46
45	.241122	.242847	.244430	.245886	.247220	.248445	.249572	.250601	45
	25	24	23	22	21	20	19	18	

TABLE XLV.

*71

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF *n* ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. 4½ PER CENT.

Pay-ments. n.	90	91	92	93	94	95	96	97	Pay-ments. n.
n.	0.399866	0.371143	0.342412	0.312760	0.282598	0.251018	0.213605	0.177500	n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.215615	.207859	.199751	.190399	.180240	.169812	.152954	.140751	2
3	.309111	.294974	.279967	.263229	.245642	.225430	.199694	.177500	3
4	.355648	.336370	.316098	.294182	.270547	.244967	.213605	10	4
5	0.379276	0.356220	0.332378	0.306615	0.279714	0.251018	11		5
6	.390948	.365406	.339071	.311281	.282598	12			6
7	.396423	.369226	.341606	.312760	13				7
8	.398714	.370680	.342412	14					8
9	.399587	.371143	15						9
10	0.399866	16							10
	17							1.281791	90
								1.281791	89
							1.280417	.281791	89
						1.278977	.280417	.281791	88
					1.277464	.278977	.280417	.281791	87
				1.275875	.277464	.278977	.280417	.281790	86
			1.274211	.275876	.277464	.278977	.280416	.281789	85
		1.272467	.274213	.275876	.277464	.278976	.280415	.281787	84
83	1.270632	.272468	.274213	.275876	.277463	.278975	.280413	.281785	83
82	.270633	.272468	.274213	.275875	.277462	.278973	.280411	.281780	82
81	.270633	.272468	.274212	.275873	.277460	.278971	.280405	.281774	81
80	.270633	.272467	.274210	.275871	.277458	.278965	.280399	.281761	80
79	1.270632	1.272465	1.274208	1.275869	1.277452	1.278958	1.280385	1.281745	79
78	.270630	.272463	.274205	.275863	.277444	.278944	.280369	.281723	78
77	.270628	.272460	.274199	.275854	.277430	.278927	.280345	.281691	77
76	.270624	.272453	.274190	.275840	.277412	.278901	.280312	.281648	76
75	.270617	.272444	.274175	.275820	.277384	.278866	.280267	.281591	75
74	1.270607	1.272428	1.274154	1.275791	1.277348	1.278819	1.280206	1.281518	74
73	.270591	.272406	.274123	.275752	.277297	.278754	.280128	.281426	73
72	.270567	.272373	.274081	.275699	.277229	.278672	.280032	.281310	72
71	.270533	.272329	.274025	.275627	.277142	.278571	.279908	.281170	71
70	.270486	.272270	.273950	.275535	.277036	.278440	.279762	.281003	70
69	1.270423	1.272190	1.273852	1.275423	1.276898	1.278286	1.279585	1.280801	69
68	.270339	.272087	.273734	.275278	.276735	.278099	.279373	.280563	68
67	.270231	.271962	.273581	.275106	.276537	.277875	.279122	.280287	67
66	.270098	.271801	.273399	.274897	.276301	.277610	.278829	.279966	66
65	.269929	.271608	.273179	.274647	.276022	.277301	.278491	.279599	65
64	1.269724	1.271376	1.272915	1.274352	1.275695	1.276945	1.278105	1.279181	64
63	.269479	.271097	.272604	.274007	.275319	.276536	.277662	.278707	63
62	.269184	.270769	.272239	.273610	.274888	.276069	.277162	.278178	62
61	.268838	.270383	.271819	.273156	.274394	.275542	.276604	.277587	61
60	.268430	.269939	.271340	.272634	.273838	.274952	.275980	.276928	60
59	1.267961	1.269433	1.270789	1.272046	1.273215	1.274293	1.275284	1.276203	59
58	.267426	.268851	.270167	.271388	.272519	.273558	.274519	.275403	58
57	.266811	.268194	.269472	.270652	.271742	.272750	.273674	.274526	57
56	.266117	.267459	.268694	.269832	.270889	.271857	.272748	.273566	56
55	.265340	.266637	.267828	.268931	.269945	.270880	.271734	.272521	55
54	1.264471	1.265722	1.266876	1.267934	1.268913	1.269809	1.270629	1.271387	54
53	.263503	.264715	.265822	.266843	.267781	.268641	.269432	.270157	53
52	.262438	.263601	.264668	.265646	.266547	.267376	.268133	.268827	52
51	.261260	.262380	.263403	.264342	.265210	.266003	.266726	.267391	51
50	.259969	.261043	.262024	.262928	.263758	.264516	.265208	.265845	50
49	1.258554	1.259585	1.260528	1.261392	1.262186	1.262911	1.263574	1.264181	49
48	.257012	.258002	.258903	.259730	.260489	.261183	.261815	.262395	48
47	.255336	.256282	.257145	.257934	.258660	.259322	.259924	.260481	47
46	.253516	.254422	.255244	.255999	.256691	.257322	.257901	.258429	46
45	.251546	.252409	.253196	.253915	.254575	.255181	.255729	.256233	45
	17	16	15	14	13	12	11	10	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

The first Value under the Age x is $\lambda(1+a_x)$ for the whole Life. **5 PER CENT.**

Payments. n.	$x=10$	11	12	13	14	15	16	17	Payments. n.
	1.249190	1.248018	1.246787	1.245487	1.244118	1.242680	1.241167	1.239571	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289190	.289185	.289182	.289178	.289171	.289165	.289161	.289154	2
3	.453548	.453539	.453534	.453523	.453510	.453500	.453490	.453475	3
4	.566862	.566850	.566838	.566823	.566805	.566789	.566773	.566751	4
5	0.652256	0.652239	0.652223	0.652202	0.652179	0.652157	0.652133	0.652104	5
6	.720028	.720006	.719985	.719959	.719930	.719901	.719871	.719834	6
7	.775673	.775646	.775620	.775588	.775553	.775518	.775480	.775435	7
8	.822470	.822438	.822407	.822370	.822328	.822285	.822240	.822186	8
9	.862534	.862497	.862461	.862417	.862368	.862319	.862265	.862201	9
10	0.897309	0.897268	0.897225	0.897175	0.897120	0.897062	0.896999	0.896928	10
11	.927826	.927779	.927730	.927674	.927611	.927544	.927474	.927390	11
12	.954845	.954791	.954737	.954673	.954601	.954528	.954446	.954353	12
13	.978941	.978883	.978821	.978749	.978671	.978587	.978496	.978394	13
14	1.000565	1.000500	1.000431	1.000353	1.000264	1.000172	1.000073	.999957	14
15	1.020071	1.019999	1.019924	1.019835	1.019740	1.019639	1.019527	1.019401	15
16	.037746	.037668	.037582	.037488	.037384	.037271	.037149	.037010	16
17	.053824	.053737	.053646	.053543	.053427	.053305	.053171	.053022	17
18	.068498	.068405	.068306	.068192	.068067	.067933	.067790	.067625	18
19	.081933	.081831	.081722	.081600	.081463	.081322	.081163	.080983	19
20	1.094262	1.094152	1.094035	1.093901	1.093758	1.093601	1.093428	1.093237	20
21	.105604	.105486	.105358	.105218	.105061	.104890	.104707	.104497	21
22	.116060	.115932	.115798	.115644	.115474	.115293	.115092	.114870	22
23	.125716	.125581	.125434	.125268	.125088	.124891	.124678	.124439	23
24	.134649	.134503	.134344	.134169	.133974	.133765	.133537	.133281	24
25	1.142924	1.142766	1.142598	1.142409	1.142202	1.141980	1.141734	1.141460	25
26	.150597	.150431	.150250	.150049	.149830	.149590	.149329	.149037	26
27	.157725	.157546	.157355	.157141	.156905	.156651	.156367	.156061	27
28	.164349	.164160	.163956	.163728	.163478	.163203	.162911	.162579	28
29	.170513	.170312	.170095	.169853	.169584	.169300	.168983	.168631	29
30	1.176252	1.176039	1.175808	1.175549	1.175270	1.174964	1.174628	1.174257	30
31	.181599	.181373	.181127	.180859	.180559	.180234	.179880	.179483	31
32	.186585	.186344	.186089	.185800	.185483	.185141	.184762	.184343	32
33	.191235	.190985	.190710	.190405	.190072	.189706	.189307	.188867	33
34	.195578	.195310	.195019	.194699	.194344	.193958	.193539	.193069	34
35	1.199628	1.199345	1.199041	1.198700	1.198325	1.197921	1.197473	1.196983	35
36	.203409	.203114	.202790	.202430	.202038	.201606	.201140	.200619	36
37	.206942	.206629	.206287	.205911	.205493	.205044	.204548	.204001	37
38	.210240	.209909	.209552	.209152	.208717	.208240	.207720	.207147	38
39	.213319	.212974	.212594	.212177	.211716	.211217	.210671	.210067	39
40	1.216197	1.215830	1.215434	1.214992	1.214511	1.213987	1.213412	1.212777	40
41	.218880	.218498	.218078	.217618	.217112	.216561	.215957	.215294	41
42	.221388	.220983	.220546	.220061	.219530	.218951	.218322	.217623	42
43	.223724	.223303	.222842	.222334	.221777	.221174	.220510	.219779	43
44	.225906	.225462	.224979	.224447	.223867	.223231	.222537	.221772	44
	10	11	12	13	14	15	16	17	

$$\text{FORMULA, } \lambda(1+a_x^{n-1}) = \lambda\,\frac{N_x - N_{x+n}}{D_x} = \lambda\frac{a_{x-1}^{n}}{vp_{x-1}}.$$

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Pay-ments.	18	19	20	21	22	23	24	25	Pay-ments.
$n.$	1.237891	1.236125	1.234265	1.232309	1.230253	1.228089	1.225813	1.223420	$n.$
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289146	.289139	.289130	.289120	.289110	.289099	.289085	.289072	2
3	.453460	.453445	.453426	.453406	.453386	.453362	.453336	.453307	3
4	.566728	.566704	.566675	.566645	.566613	.566577	.566536	.566492	4
5	0.652073	0.652039	0.652000	0.651959	0.651916	0.651865	0.651810	0.651750	5
6	.719794	.719751	.719702	.719650	.719592	.719528	.719458	.719380	6
7	.775386	.775333	.775274	.775207	.775137	.775059	.774972	.774877	7
8	.822127	.822065	.821991	.821914	.821831	.821736	.821633	.821520	8
9	.862134	.862058	.861975	.861885	.861786	.861677	.861555	.861424	9
10	0.896847	0.896762	0.896667	0.896562	0.896449	0.896322	0.896184	0.896030	10
11	.927301	.927205	.927095	.926976	.926847	.926704	.926545	.926371	11
12	.954254	.954144	.954021	.953887	.953742	.953579	.953401	.953207	12
13	.978281	.978159	.978021	.977873	.977709	.977528	.977330	.977111	13
14	.999833	.999697	.999545	.999379	.999198	.998998	.998777	.998536	14
15	1.019263	1.019114	1.018946	1.018763	1.018564	1.018342	1.018100	1.017833	15
16	.036861	.036695	.036511	.036311	.036091	.035850	.035583	.035291	16
17	.052856	.052675	.052475	.052255	.052017	.051752	.051461	.051143	17
18	.067444	.067249	.067029	.066793	.066532	.066244	.065929	.065581	18
19	.080790	.080575	.080340	.080082	.079800	.079489	.079145	.078770	19
20	1.093024	1.092796	1.092540	1.092262	1.091957	1.091619	1.091250	1.090842	20
21	.104271	.104023	.103749	.103448	.103119	.102756	.102356	.101916	21
22	.114626	.114360	.114064	.113741	.113388	.112996	.112565	.112097	22
23	.124178	.123891	.123574	.123229	.122847	.122427	.121969	.121463	23
24	.133000	.132693	.132355	.131982	.131575	.131128	.130635	.130094	24
25	1.141161	1.140833	1.140469	1.140072	1.139639	1.139160	1.138632	1.138056	25
26	.148717	.148356	.147978	.147557	.147093	.146581	.146021	.145404	26
27	.155720	.155346	.154936	.154484	.153990	.153447	.152848	.152194	27
28	.162216	.161821	.161382	.160902	.160378	.159798	.159164	.158466	28
29	.168248	.167825	.167359	.166852	.166293	.165680	.165004	.164266	29
30	1.173847	1.173399	1.172908	1.172366	1.171776	1.171123	1.170410	1.169626	30
31	.179049	.178578	.178053	.177483	.176855	.176166	.175412	.174584	31
32	.183888	.183384	.182833	.182226	.181564	.180837	.180039	.179163	32
33	.188380	.187852	.187266	.186628	.185929	.185161	.184317	.183395	33
34	.192561	.191999	.191383	.190710	.189972	.189161	.188273	.187300	34
35	1.196442	1.195852	1.195204	1.194493	1.193715	1.192862	1.191926	1.190902	35
36	.200051	.199431	.198747	.197998	.197180	.196282	.195298	.194222	36
37	.203405	.202751	.202030	.201244	.200384	.199439	.198406	.197278	37
38	.206518	.205829	.205074	.204247	.203342	.202352	.201270	.200085	38
39	.209405	.208685	.207889	.207021	.206073	.205037	.203901	.202663	39
40	1.212086	1.211326	1.210492	1.209583	1.208592	1.207504	1.206318	1.205022	40
41	.214566	.213769	.212897	.211947	.210907	.209772	.208530	.207174	41
42	.216860	.216027	.215116	.214120	.213035	.211847	.210549	.209139	42
43	.218981	.218112	.217157	.216118	.214984	.213743	.212393	.210921	43
44	.220940	.220030	.219034	.217949	.216765	.215474	.214066	.212531	44
	18	19	20	21	22	23	24	25	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Payments. n.	$x=26$	27	28	29	30	31	32	33	Payments. n.
	1.220904	1.218261	1.215481	1.212561	1.209497	1.206277	1.202896	1.199343	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.289055	.289039	.289020	.288997	.288976	.288951	.288925	.288894	2
3	.453274	.453240	.453200	.453156	.453111	.453061	.453006	.452944	3
4	.566442	.566388	.566328	.566262	.566194	.566115	.566031	.565934	4
5	0.651681	0.651609	0.651528	0.651439	0.651343	0.651237	0.651120	0.650988	5
6	.719293	.719201	.719098	.718982	.718861	.718725	.718574	.718408	6
7	.774771	.774658	.774530	.774390	.774241	.774072	.773889	.773684	7
8	.821394	.821258	.821107	.820940	.820759	.820559	.820340	.820097	8
9	.861276	.861117	.860941	.860744	.860534	.860300	.860044	.859760	9
10	0.895861	0.895679	0.895474	0.895250	0.895007	0.894738	0.894444	0.894116	10
11	.926180	.925971	.925739	.925484	.925209	.924903	.924567	.924195	11
12	.952990	.952755	.952494	.952209	.951897	.951553	.951175	.950756	12
13	.976871	.976607	.976318	.975997	.975650	.975266	.974843	.974377	13
14	.998267	.997977	.997654	.997301	.996916	.996488	.996021	.995504	14
15	1.017539	1.017217	1.016863	1.016473	1.016046	1.015577	1.015062	1.014493	15
16	.034968	.034616	.034228	.033798	.033332	.032818	.032252	.031628	16
17	.050790	.050407	.049980	.049513	.049005	.048442	.047825	.047147	17
18	.065199	.064779	.064317	.063810	.063256	.062644	.061976	.061235	18
19	.078353	.077899	.077400	.076849	.076249	.075589	.074861	.074063	19
20	1.090392	1.089904	1.089363	1.088769	1.088122	1.087405	1.086624	1.085758	20
21	.101435	.100907	.100324	.099686	.098985	.098218	.097372	.096444	21
22	.111577	.111009	.110385	.109695	.108947	.108119	.107214	.106217	22
23	.120906	.120299	.119626	.118891	.118086	.117201	.116231	.115166	23
24	.129499	.128846	.128131	.127342	.126483	.125537	.124501	.123361	24
25	1.137418	1.136724	1.135958	1.135118	1.134201	1.133193	1.132087	1.130873	25
26	.144727	.143985	.143170	.142275	.141299	.140225	.139049	.137758	26
27	.151471	.150684	.149816	.148866	.147827	.146687	.145438	.144066	27
28	.157701	.156862	.155944	.154934	.153833	.152623	.151297	.149846	28
29	.163452	.162567	.161591	.160522	.159355	.158072	.156672	.155136	29
30	1.168768	1.167827	1.166796	1.165665	1.164429	1.163076	1.161596	1.159973	30
31	.173673	.172681	.171591	.170394	.169091	.167664	.166101	.164394	31
32	.178204	.177155	.176003	.174743	.173370	.171864	.170221	.168423	32
33	.182382	.181275	.180063	.178737	.177290	.175708	.173979	.172090	33
34	.186233	.185069	.183794	.182398	.180879	.179216	.177402	.175422	34
35	1.189780	1.188557	1.187216	1.185752	1.184157	1.182413	1.180513	1.178438	35
36	.193044	.191758	.190354	.188818	.187145	.185320	.183330	.181164	36
37	.196041	.194695	.193222	.191612	.189864	.187954	.185879	.183620	37
38	.198792	.197381	.195837	.194157	.192328	.190338	.188175	.185820	38
39	.201308	.199830	.198221	.196464	.194550	.192487	.190233	.187785	39
40	1.203603	1.202064	1.200382	1.198545	1.196572	1.194413	1.192071	1.189534	40
41	.205698	.204089	.202332	.200439	.198375	.196133	.193708	.191077	41
42	.207597	.205918	.204107	.202129	.199986	.197667	.195152	.192435	42
43	.209312	.207583	.205692	.203639	.201424	.199019	.196424	.193621	43
44	.210875	.209070	.207108	.204987	.202691	.200211	.197534	.194646	44
	26	27	28	29	30	31	32	33	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Pay-ments. $n.$	34	35	36	37	38	39	40	41	Pay-ments. $n.$
	1.195615	1.191703	1.187604	1.183299	1.178783	1.174051	1.169091	1.163896	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.288861	.288821	.288783	.288741	.288690	.288637	.288577	.288516	2
3	.452874	.452797	.452719	.452629	.452528	.452418	.452299	.452168	3
4	.565828	.565712	.565590	.565452	.565297	.565131	.564945	.564745	4
5	0.650846	0.650688	0.650521	0.650332	0.650122	0.649894	0.649642	0.649369	5
6	.718225	.718025	.717809	.717569	.717300	.717008	.716688	.716337	6
7	.773461	.773214	.772950	.772653	.772324	.771967	.771573	.771143	7
8	.819830	.819536	.819219	.818865	.818474	.818047	.817578	.817064	8
9	.859447	.859104	.858733	.858320	.857862	.857365	.856815	.856216	9
10	0.893757	0.893362	0.892935	0.892459	0.891934	0.891359	0.890729	0.890039	10
11	.923787	.923339	.922852	.922312	.921715	.921064	.920348	.919565	11
12	.950298	.949793	.949245	.948637	.947967	.947235	.946431	.945549	12
13	.973865	.973302	.972690	.972013	.971266	.970450	.969552	.968571	13
14	.994937	.994313	.993636	.992885	.992059	.991155	.990162	.989074	14
15	1.013868	1.013183	1.012434	1.011610	1.010699	1.009706	1.008612	1.007416	15
16	.030946	.030192	.029375	.028469	.027475	.026385	.025190	.023879	16
17	.046399	.045581	.044686	.043701	.042616	.041430	.040125	.038701	17
18	.060427	.059535	.058565	.057495	.056318	.055028	.053617	.052072	18
19	.073184	.072221	.071171	.070014	.068738	.067349	.065823	.064153	19
20	1.084812	1.083773	1.082642	1.081390	1.080021	1.078522	1.076879	1.075080	20
21	.095425	.094310	.093088	.091749	.090276	.088667	.086900	.084972	21
22	.105126	.103926	.102620	.101183	.099606	.097879	.095991	.093921	22
23	.113995	.112714	.111317	.109780	.108092	.106252	.104229	.102035	23
24	.122113	.120746	.119254	.117614	.115818	.113850	.111711	.109366	24
25	1.129544	1.128087	1.126498	1.124755	1.122839	1.120761	1.118479	1.115994	25
26	.136344	.134796	.133110	.131254	.129233	.127020	.124606	.121973	26
27	.142567	.140926	.139134	.137178	.135030	.132692	.130139	.127358	27
28	.148258	.146519	.144630	.142554	.140289	.137821	.135127	.132199	28
29	.153456	.151623	.149623	.147437	.145049	.142448	.139616	.136537	29
30	1.158204	1.156267	1.154162	1.151860	1.149346	1.146614	1.143641	1.140412	30
31	.162527	.160491	.158276	.155855	.153218	.150354	.147238	.143859	31
32	.166461	.164322	.161995	.159458	.156696	.153697	.150441	.146913	32
33	.170032	.167786	.165350	.162696	.159807	.156676	.153279	.149605	33
34	.173263	.170915	.168368	.165594	.162580	.159317	.155783	.151967	34
35	1.176182	1.173729	1.171070	1.168178	1.165041	1.161648	1.157980	1.154022	35
36	.178810	.176251	.173480	.170473	.167212	.163694	.159893	.155800	36
37	.181165	.178500	.175622	.172497	.169119	.165476	.161548	.157326	37
38	.183266	.180501	.177511	.174276	.170782	.167018	.162969	.158626	38
39	.185136	.182266	.179172	.175828	.172219	.168342	.164179	.159718	39
40	1.186786	1.183818	1.180621	1.177169	1.173454	1.169470	1.165197	1.160629	40
41	.188237	.185172	.181874	.178322	.174507	.170419	.166046	.161380	41
42	.189504	.186343	.182952	.179306	.175392	.171211	.166746	.161989	42
43	.190599	.187351	.183871	.180132	.176131	.171864	.167313	.162474	43
44	.191542	.188210	.184643	.180822	.176741	.172393	.167765	.162861	44
	34	35	36	37	38	39	40	41	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT

Pay-ments. n.	$x=42$ 1.158448	43 1.152750	44 1.146778	45 1.140532	46 1.133997	47 1.127159	48 1.120012	49 1.112544	Pay-ments. n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.288442	.288366	.288279	.288184	.288081	.287967	.287841	.287704	2
3	.452020	.451864	.451686	.451494	.451283	.451048	.450792	.450511	3
4	.564520	.564278	.564007	.563710	.563388	.563029	.562637	.562206	4
5	0.649063	0.648732	0.648362	0.647962	0.647519	0.647032	0.646498	0.645909	5
6	.715947	.715523	.715054	.714539	.713975	.713353	.712670	.711921	6
7	.770664	.770146	.769569	.768939	.768247	.767485	.766649	.765730	7
8	.816495	.815875	.815189	.814438	.813614	.812705	.811709	.810616	8
9	.855551	.854828	.854026	.853150	.852187	.851127	.849966	.848693	9
10	0.889276	0.888444	0.887524	0.886516	0.885410	0.884194	0.882862	0.881400	10
11	.918698	.917753	.916709	.915566	.914311	.912933	.911424	.909766	11
12	.944576	.943514	.942341	.941057	.939649	.938105	.936409	.934551	12
13	.967486	.966301	.964996	.963567	.962002	.960281	.958396	.956332	13
14	.987874	.986564	.985121	.983544	.981812	.979912	.977833	.975555	14
15	1.006096	1.004656	1.003073	1.001338	0.999437	0.997354	0.995073	0.992575	15
16	.022438	.020865	.019133	.017238	1.015164	1.012890	1.010401	1.007676	16
17	.037133	.035420	.033537	.031478	.029223	.026753	.024051	.021100	17
18	.050372	.048515	.046478	.044248	.041809	.039138	.036222	.033036	18
19	.062316	.060315	.058107	.055713	.053084	.050211	.047074	.043650	19
20	1.073107	1.070944	1.068590	1.066007	1.063188	1.060107	1.056746	1.053080	20
21	.082848	.080546	.078013	.075253	.072237	.068945	.065357	.061448	21
22	.091665	.089195	.086495	.083548	.080334	.076828	.073011	.068857	22
23	.099620	.096992	.094116	.090982	.087567	.083846	.079799	.075400	23
24	.106802	.104008	.100956	.097633	.094016	.090079	.085800	.081156	24
25	1.113273	1.110314	1.107083	1.103570	1.099750	1.095595	1.091087	1.086204	25
26	.119096	.115969	.112559	.108856	.104830	.100460	.095728	.090606	26
27	.124324	.121028	.117440	.113542	.109315	.104734	.099779	.094424	27
28	.129005	.125541	.121770	.117684	.113258	.108468	.103294	.097711	28
29	.133185	.129549	.125600	.121328	.116706	.111711	.106323	.100525	29
30	1.136899	1.133096	1.128973	1.124515	1.119702	1.114507	1.108917	1.102914	30
31	.140188	.136221	.131924	.127287	.122286	.116901	.111121	.104919	31
32	.143087	.138957	.134492	.129679	.124500	.118938	.112971	.106586	32
33	.145628	.141339	.136709	.131730	.126384	.120647	.114510	.107957	33
34	.147839	.143397	.138610	.133475	.127966	.122070	.115776	.109070	34
35	1.149751	1.145161	1.140229	1.134940	1.129283	1.123240	1.116804	1.109957	35
36	.151390	.146665	.141588	.136161	.130366	.124191	.117623	.110657	36
37	.152788	.147926	.142721	.137165	.131247	.124949	.118270	.111196	37
38	.153961	.148979	.143653	.137982	.131949	.125547	.118768	.111605	38
39	.154940	.149845	.144411	.138632	.132503	126007	.119145	.111910	39
40	1.155746	1.150550	1.145014	1.139147	1.132929	1.126356	1.119427	1.112128	40
41	.156401	.151110	.145493	.139542	.133252	.126617	.119628	.112283	41
42	.156922	.151555	.145859	.139841	.133494	.126803	.119772	.112388	42
43	.157337	.151895	.146137	.140065	.133666	.126937	.119869	.112455	43
44	.157653	.152154	.146345	.140225	.133790	.127026	.119931	.112496	44
	42	43	44	45	46	47	48	49	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n
ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. **5** PER CENT.

Pay-ments. $n.$	50	51	52	53	54	55	56	57	Pay-ments. $n.$
	1.104739	1.096590	1.088084	1.079208	1.069947	1.060290	1.050232	1.039753	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.287551	.287384	.287201	.287001	.286782	.286535	.286270	.285973	2
3	.450200	.449859	.449486	.449078	.448627	.448128	.447584	.446980	3
4	.561729	.561209	.560639	.560012	.559322	.558559	.557725	.556805	4
5	0.645263	0.644555	0.643778	0.642925	0.641986	0.640948	0.639816	0.638570	5
6	.711096	.710193	.709202	.708114	.706914	.705595	.704155	.702568	6
7	.764721	.763615	.762403	.761068	.759603	.757993	.756230	.754294	7
8	.809416	.808101	.806655	.805069	.803329	.801415	.799323	.797025	8
9	.847294	.845758	.844074	.842230	.840203	.837978	.835545	.832878	9
10	0.879793	0.878033	0.876106	0.873990	0.871670	0.869124	0.866344	0.863295	10
11	.907947	.905956	.903773	.901381	.898758	.895885	.892746	.889308	11
12	.932514	.930282	.927838	.925160	.922230	.919019	.915515	.911680	12
13	.954068	.951590	.948876	.945910	.942661	.939107	.935229	.930992	13
14	.973058	.970325	.967340	.964074	.960503	.956598	.952343	.947700	14
15	0.989837	0.986849	0.983583	0.980013	0.976113	0.971854	0.967218	0.962164	15
16	1.004699	1.001446	.997893	.994014	.989782	.985165	.980146	.974678	16
17	.017873	.014351	1.010508	1.006317	1.001749	.996773	.991366	.985490	17
18	.029556	.025761	.021625	.017120	.012215	1.006876	1.001088	.994807	18
19	.039913	.035843	.031411	.026590	.021345	.015651	.009484	1.002802	19
20	1.049085	1.044737	1.040009	1.034869	1.029293	1.023244	1.016704	1.009629	20
21	.057192	.052566	.047540	.042090	.036181	.029785	.022878	.015427	21
22	.064340	.059435	.054118	.048357	.042125	.035386	.028129	.020313	22
23	.070621	.065443	.059836	.053773	.047220	.040155	.032560	.024399	23
24	.076122	.070673	.064783	.058420	.051563	.044185	.036269	.027781	24
25	1.080915	1.075201	1.069031	1.062385	1.055238	1.047560	1.039340	1.030548	25
26	.085069	.079093	.072659	.065743	.058316	.050357	.041855	.032789	26
27	.088643	.082420	.075734	.068558	.060869	.052648	.043894	.034575	27
28	.091700	.085242	.078313	.070893	.062962	.054507	.045519	.035978	28
29	.094294	.087610	.080454	.072809	.064660	.055988	.046795	.037059	29
30	1.096471	1.089575	1.082211	1.074363	1.066013	1.057153	1.047779	1.037879	30
31	.098279	.091190	.083637	.075602	.067078	.058051	.048525	.038487	31
32	.099766	.092501	.084774	.076578	.067900	.058731	.049080	.038924	32
33	.100973	.093546	.085670	.077331	.068522	.059238	.049477	.039232	33
34	.101935	.094370	.086360	.077901	.068985	.059600	.049758	.039441	34
35	1.102694	1.095004	1.086884	1.078325	1.069316	1.059857	1.049948	1.039576	35
36	.103278	.095486	.087273	.078629	.069552	.060030	.050072	.039657	36
37	.103722	.095844	.087553	.078845	.069710	.060144	.050145	.039703	37
38	.104052	.096101	.087751	.078990	.069814	.060210	.050187	.039730	38
39	.104288	.096284	.087884	.079085	.069875	.060248	.050212	.039744	39
40	1.104457	1.096406	1.087971	1.079141	1.069910	1.060271	1.050225	1.039750	40
41	.104570	.096486	.088023	.079173	.069931	.060283	.050230	.039753	41
42	.104643	.096534	.088052	.079193	.069942	.060287	.050233	.039753	42
43	.104687	.096561	.088071	.079203	.069945	.060290	.050233	.039753	43
44	.104712	.096578	.088080	.079205	.069948	.060290	.050230		
45	1.104728	1.096586	1.088082	1.079208	1.069948	1.060290			45
46	.104735	.096588	.088083	.079208					46
47	.104737	.096590	.088084						47
48	.104739	.096590							48
49	.104739								49
	50	51	52	53	54	55	56	57	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR. **5 PER CENT.**

Pay-ments. n.	$x=58$	59	60	61	62	63	64	65	Pay-ments. n.
	1.028851	1.017506	1.005705	0.993441	0.980708	0.967485	0.953771	0.939554	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.285651	.285299	.284908	.284479	.284011	.283494	.282926	.282300	2
3	.446325	.445605	.444810	.443937	.442984	.441932	.440776	.439509	3
4	.555804	.554702	.553489	.552159	.550702	.549098	.547340	.545411	4
5	0.637208	0.635712	0.634067	0.632263	0.630289	0.628118	0.625740	0.623135	5
6	.700835	.698932	.696841	.694552	.692045	.689292	.686282	.682984	6
7	.752177	.749855	.747308	.744519	.741465	.738121	.734461	.730461	7
8	.794515	.791763	.788747	.785443	.781837	.777885	.773570	.768856	8
9	.829063	.826771	.823271	.819450	.815276	.810711	.805730	.800300	9
10	0.859966	0.856322	0.852337	0.847985	0.843237	0.838051	0.832404	0.826254	10
11	.885556	.881455	.876974	.872086	.866758	.860953	.854637	.847771	11
12	.907499	.902934	.897952	.892522	.886618	.880190	.873209	.865635	12
13	.926377	.921344	.915855	.909888	.903405	.896360	.888724	.880456	13
14	.942646	.937140	.931150	.924644	.917588	.909935	.901658	.892715	14
15	0.956668	0.950694	0.944203	0.937165	0.929544	0.921299	0.912399	0.902806	15
16	.968745	.962305	.955318	.947756	.939587	.930766	.921268	.911058	16
17	.979124	.972221	.964748	.956677	.947976	.938605	.928538	.917744	17
18	.988009	.980655	.972711	.964147	.954939	.945043	.934441	.923111	18
19	.995584	.987792	.979391	.970359	.960667	.950280	.939187	.927363	19
20	1.002005	0.993790	0.984956	0.975478	0.965334	0.954497	0.942953	0.930685	20
21	.007410	.998794	.989548	.979653	.969096	.957846	.945897	.933238	21
22	.011925	1.002928	.993297	.983022	.972087	.960467	.948161	.935165	22
23	.015658	.006306	.996325	.985703	.974429	.962484	.949872	.936589	23
24	.018711	.009036	.998736	.987804	.976232	.964008	.951137	.937618	24
25	1.021181	1.011212	1.000627	0.989422	0.977596	0.965136	0.952050	0.938335	25
26	.023150	.012919	.002083	.990646	.978606	.965950	.952688	.938827	26
27	.024695	.014233	.003186	.991553	.979334	.966519	.953124	.939139	27
28	.025385	.015230	.004003	.992207	.979843	.966908	.953402	.939328	28
29	.026788	.015968	.004592	.992665	.980191	.967156	.953569	.939438	29
30	1.027457	1.016500	1.005005	0.992977	0.980413	0.967305	0.953667	0.939499	30
31	.027939	.016873	.005286	.993177	.980547	.967392	.953722	.939531	31
32	.028277	.017128	.005467	.993297	.980624	.967442	.953750	.939544	32
33	.028508	.017291	.005575	.993366	.980669	.967467	.953762	.939551	33
34	.028656	.017389	.005637	.993406	.980691	.967477	.953768	.939553	34
35	1.028745	1.017445	1.005673	0.993426	0.980701	0.967483	0.953770	0.939554	35
36	.028796	.017477	.005691	.993435	.980706	.967485	.953771		36
37	.028825	.017494	.005699	.993439	.980708	.967485		**42**	37
38	.028841	.017501	.005703	.993441	.980708		**43**	1.158448	58
39	.028847	.017505	.005704	.993441		**44**	1.152750	.158448	57
40	1.028851	1.017506	1.005705		**45**	1.146778	.152750	.158448	56
41	.028851	.017506		**46**	1.140532	.146779	.152750	.158446	55
42	.028851		**47**	1.133997	1.140532	1.146779	1.152748	1.158445	54
	49	**48**	1.127159	.133997	.140532	.146777	.152747	.158443	53
		1.120012	.127160	.133997	.140530	.146776	.152744	.158432	52
51	1.112544	.120013	.127160	.133995	.140529	.146772	.152733	.158419	51
50	.112544	.120013	.127158	.133994	.140525	.146761	.152719	.158395	50
49	1.112544	1.120011	1.127157	1.133989	1.140513	1.146746	1.152693	1.158356	49
48	.112542	.120010	.127151	.133977	.140497	.146718	.152651	.158294	48
47	.112540	.120004	.127138	.133959	.140467	.146672	.152584	.158201	47
46	.112534	.119990	.127119	.133927	.140417	.146600	.152484	.158073	46
45	.112519	.119969	.127084	.133873	.140340	.146493	.152347	.157894	45
	49	**48**	**47**	**46**	**45**	**44**	**43**	**42**	

TABLE XLVI. *79

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Pay-ments.	66	67	68	69	70	71	72	73	Pay-ments.
n.	0.924834	0.909590	0.893832	0.877530	0.860711	0.843350	0.825455	0.807021	n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.281620	.280864	.280048	.279136	.278148	.277058	.275867	.274565	2
3	.438123	.436599	.434934	.433097	.431094	.428896	.426495	.423862	3
4	.543304	.540986	.538460	.535675	.532643	.529321	.525690	.521720	4
5	0.620287	0.617164	0.613755	0.610013	0.605938	0.601478	0.596614	0.591309	5
6	.679383	.675438	.671139	.666429	.661302	.655705	.649613	.642980	6
7	.726095	.721322	.716125	.710441	.704264	.697538	.690228	.682291	7
8	.763720	.758113	.752015	.745362	.738146	.730302	.721801	.712593	8
9	.794390	.787949	.780955	.773345	.765103	.756171	.746513	.736083	9
10	0.819572	0.812303	0.804427	0.795875	0.786638	0.776651	0.765885	0.754299	10
11	.840323	.832240	.823499	.814035	.803836	.792842	.781031	.768362	11
12	.857436	.848558	.838981	.828638	.817523	.805584	.792797	.779133	12
13	.871525	.861879	.851498	.840321	.828349	.815530	.801851	.787287	13
14	.883078	.872697	.861555	.849600	.836833	.823211	.808728	.793372	14
15	0.892496	0.881419	1.869570	0.856894	0.843404	0.829062	0.813873	0.797832	15
16	.900110	.888390	.875886	.862558	.848421	.833448	.817651	.801033	16
17	.906210	.893894	.880800	.866890	.852187	.836674	.820367	.803255	17
18	.911035	.898184	.884565	.870146	.854962	.838996	.822254	.804781	18
19	.914800	.901474	.887398	.872547	.856960	.840610	.823550	.805741	19
20	0.917691	0.903953	0.889489	0.874279	0.858350	0.841718	0.824366	0.806326	20
21	.919872	.905783	.890998	.875483	.859305	.842417	.824863	.806666	21
22	.921482	.907105	.892047	.876311	.859907	.842843	.825153	.806852	22
23	.922646	.908025	.892768	.876833	.860274	.843091	.825311	.806948	23
24	.923456	.908657	.893224	.877151	.860488	.843227	.825393	.806993	24
25	0.924013	0.909057	0.893501	0.877337	0.860605	0.843297	0.825431	0.807012	25
26	.924365	.909300	.893663	.877438	.860666	.843329	.825447	.807019	26
27	.924579	.909441	.893752	.877491	.860693	.843343	.825453	.807021	27
28	.924703	.909519	.893798	.877514	.860705	.843348	.825455		28
29	.924772	.909560	.893818	.877525	.860709	.843350		34	29
30	0.924808	0.909577	0.893828	0.877528	0.860711		35	1.195615	30
31	.924823	.909586	.893830	.877530		36	1.191703	.195614	31
32	.924831	.909588	.893832		37		1.191701	1.195614	32
33	.924833	.909590		38		1.187604	1.191701	1.195614	33
34	.924834		39		1.183299	.187603	.191701	1.195614	34
		40		1.178783	.183298	.187603	.191701	1.195613	62
	41		1.174051	.178781	.183298	.187612	.191701	.195606	61
		1.169091	.174050	.178781	.183297	.187602	.191700	.195606	60
59	1.163896	1.169090	1.174050	1.178780	1.183297	1.187602	1.191692	1.195598	59
58	.163896	.169090	.174049	.178780	.183295	.187592	.191684	.195583	58
57	.163896	.169089	.174048	.178778	.183287	.187584	.191668	.195562	57
56	.163894	.169088	.174046	.178769	.183278	.187568	.191645	.195526	56
55	.163893	.169086	.174037	.178760	.183261	.187548	.191607	.195472	55
54	1.163891	1.169076	1.174027	1.178741	1.183234	1.187502	1.191550	1.195398	54
53	.163881	.169065	.174007	.178712	.183191	.187441	.191471	.195294	53
52	.163869	.169044	.173976	.178666	.183125	.187357	.191359	.195154	52
51	.163846	.169010	.173926	.178596	.183035	.187237	.191210	.194971	51
50	.163810	.168956	.173851	.178499	.182907	.187077	.191015	.194732	50
49	1.163752	1.168876	1.173747	1.178363	1.182736	1.186869	1.190759	1.194437	49
48	.163666	.168765	.173602	.178180	.182514	.186596	.190437	.194052	48
47	.163546	.168609	.173406	.177942	.182221	.186252	.190033	.193587	47
46	.163379	.168400	.173151	.177628	.181853	.185820	.189536	.193023	46
45	.163155	.168126	.172814	.177235	.181392	.185288	.188933	.192346	45
	41	40	39	38	37	36	35	34	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Payments. n.	x=74	75	76	77	78	79	80	81	Payments. n.
	0.788039	0.768544	0.748513	0.727935	0.706853	0.685247	0.663118	0.640468	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.273121	.271556	.269845	.267955	.265900	.263651	.261191	.258516	2
3	.420968	.417828	.414391	.410619	.406519	.402044	.397173	.391869	3
4	.517374	.512654	.507501	.501868	.495755	.489111	.481890	.474070	4
5	0.585515	0.579229	0.572385	0.564931	0.556868	0.548124	0.538671	0.528466	5
6	.635757	.627935	.619444	.610236	.600297	.589573	.578019	.565609	6
7	.673671	.664359	.654291	.643406	.631708	.619132	.605652	.591253	7
8	.702624	.691893	.680323	.667874	.654542	.640282	.625077	.608915	8
9	.724834	.712758	.699796	.685902	.671094	.655336	.638617	.620953	9
10	0.741844	0.728525	0.714284	0.699094	0.682982	0.665917	0.647917	0.628878	10
11	.754796	.740342	.724961	.708631	.691389	.673227	.654072	.633875	11
12	.764558	.749097	.732717	.715406	.697167	.678084	.657966	.636899	12
13	.771820	.755481	.738246	.720077	.701106	.681163	.660327	.638648	13
14	.777130	.760045	.742067	.723269	.703574	.683032	.661695	.639602	14
15	0.780935	0.763204	0.744683	0.725271	0.705074	0.684118	0.662441	0.640089	15
16	.783573	.765370	.746325	.726489	.705946	.684709	.662822	.640322	16
17	.785383	.766731	.747325	.727198	.706421	.685012	.663004	.640418	17
18	.786522	.767560	.747907	.727584	.706665	.685156	.663079	.640456	18
19	.787215	.768042	.748225	.727782	.706780	.685215	.663109	.640468	19
20	0.787618	0.768306	0.748387	0.727876	0.706828	0.685239	0.663118	[26]	
21	.787839	.768441	.748464	.727915	.706847	.685247	[27]		
22	.787952	.768504	.748496	.727930	.706853	[28]			
23	.788005	.768531	.748508	.727935	[29]			1.220904	74
24	.788028	.768541	.748513	[30]			1.218261	.220905	73
25	0.788036	0.768544	[31]			1.215481	.218262	.220905	72
26	.788039	[32]			1.212561	.215483	.218262	.220905	71
	[33]			1.209497	.212562	.215483	.218262	.220905	70
			1.206277	.209498	.212562	.215483	1.218262	1.220904	69
		1.202896	.206277	.209498	.212562	.215483	.218261	.220899	68
67	1.199343	.202895	.206277	.209498	.212562	.215482	.218256	.220893	67
66	.199342	.202895	.206277	.209498	.212561	.215476	.218250	.220885	66
65	.199342	.202895	.206277	.209497	.212555	.215470	.218241	.220873	65
64	1.199342	1.202895	1.206276	1.209491	1.212548	1.215460	1.218228	1.220851	64
63	.199342	.202894	.206270	.209484	.212538	.215446	.218205	.220817	63
62	.199341	.202888	.206263	.209473	.212523	.215422	.218169	.220772	62
61	.199335	.202881	.206251	.209457	.212497	.215384	.218121	.220711	61
60	.199327	.202868	.206234	.209429	.212457	.215333	.218056	.220627	60
59	1.199313	1.202850	1.206204	1.209387	1.212403	1.215263	1.217967	1.220516	59
58	.199294	.202818	.206159	.209329	.212328	.215169	.217849	.220374	58
57	.199260	.202770	.206098	.209249	.212228	.215043	.217697	.220191	57
56	.199209	.202705	.206012	.209142	.212094	.214881	.217503	.219965	56
55	.199140	.202614	.205898	.208999	.211922	.214675	.217262	.219685	55
54	1.199043	1.202491	1.205746	1.208816	1.211702	1.214419	1.216964	1.219347	54
53	.198911	.202330	.205551	.208583	.211429	.214101	.216605	.218940	53
52	.198740	.202121	.205302	.208291	.211091	.213719	.216172	.218461	52
51	.198516	.201856	.204991	.207931	.210683	.213258	.215661	.217895	51
50	.198234	.201524	.204607	.207496	.210193	.212713	.215059	.217238	50
49	1.197879	1.201115	1.204143	1.206974	1.209612	1.212073	1.214360	1.216481	49
48	.197443	.200620	.203587	.206355	.208930	.211328	.213554	.215615	48
47	.196915	.200027	.202927	.205628	.208137	.210470	.212631	.214632	47
46	.196282	.199322	.202152	.204783	.207223	.209487	.211585	.213518	46
45	.195529	.198495	.201251	.203808	.206175	.208372	.210398	.212271	45
	33	32	31	30	29	28	27	26	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Payments. n.	82	83	84	85	86	87	88	89	Payments. n.
	0.617258	0.593510	0.569083	0.543949	0.517851	0.490338	0.461018	0.428340	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.255571	.252400	.248902	.245128	.241062	.236517	.231773	.223681	2
3	.386091	.379847	.373034	.365722	.357791	.349165	.338513	.323210	3
4	.465583	.456446	.446561	.435952	.424566	.411342	.395201	.374409	4
5	0.517453	0.505659	0.492958	0.479431	0.464382	0.446913	0.426510	0.401609	5
6	.552297	.538098	.522932	.506445	.488069	.467291	.443722	.415812	6
7	.575884	.559600	.542018	.522889	.501928	.478711	.452865	.422907	7
8	.591780	.573508	.553805	.532637	.509785	.484838	.457472	.426267	8
9	.602169	.582179	.560851	.538204	.514027	.487942	.459663	.427642	9
10	0.608689	0.587392	0.564895	0.541222	0.516183	0.489422	0.460562	0.428172	10
11	.612625	.590394	.567093	.542759	.517212	.490030	.460908	.428340	11
12	.614896	.592029	.568214	.543493	.517636	.490264	.461018	[18]	
13	.616135	.592863	.568750	.543796	.517799	.490338	[19]		
14	.616767	.593262	.568971	.543913	.517851	[20]			
15	0.617070	0.593427	0.569057	0.543949	[21]				
16	.617194	.593491	.569083	[22]					
17	.617243	.593510	[23]						
18	.617258	[24]							
	[25]								
								1.237891	82
							1.236125	.237893	81
						1.234265	.236127	.237893	80
					1.232309	.234266	.236127	.237893	79
				1.230253	.232310	.234266	.236127	.237893	78
			1.228089	.230254	.232310	.234266	.236127	.237892	77
		1.225813	.228090	.230254	.232310	.234266	.236126	.237889	76
75	1.223420	.225814	.228090	.230254	.232310	.234265	.236123	.237886	75
74	1.223422	1.225814	1.228090	1.230254	1.232309	1.234262	1.236120	1.237879	74
73	.223422	.225814	.228090	.230253	.232306	.234259	.236112	.237874	73
72	.223422	.225814	.228089	.230250	.232303	.234251	.236107	.237859	72
71	.223422	.225813	.228086	.230246	.232295	.234245	.236091	.237837	71
70	.223421	.225809	.228081	.230238	.232288	.234229	.236068	.237810	70
69	1.223416	1.225804	1.228073	1.230230	1.232271	1.234204	1.236039	1.237772	69
68	.223411	.225796	.228064	.230212	.232245	.234173	.235999	.237721	68
67	.223403	.225786	.228045	.230185	.232212	.234131	.235945	.237652	67
66	.223392	.225766	.228016	.230150	.232167	.234073	.235871	.237564	66
65	.223371	.225736	.227979	.230102	.232105	.233995	.235778	.237453	65
64	1.223339	1.225697	1.227928	1.230037	1.232023	1.233896	1.235660	1.237312	64
63	.223297	.225643	.227859	.229950	.231918	.233771	.235510	.237140	63
62	.223240	.225569	.227766	.229838	.231785	.233612	.235328	.236933	62
61	.223161	.225470	.227648	.229696	.231616	.233418	.235108	.236683	61
60	.223056	.225345	.227497	.229517	.231410	.233184	.234842	.236388	60
59	1.222923	1.225184	1.227307	1.229298	1.231161	1.232902	1.234530	1.236040	59
58	.222751	.224982	.227074	.229034	.230862	.232571	.234160	.235636	58
57	.222538	.224735	.226794	.228715	.230510	.232178	.233732	.235172	57
56	.222275	.224436	.226455	.228342	.230093	.231723	.233238	.234641	56
55	.221957	.224077	.226058	.227899	.229609	.231199	.232674	.234037	55
54	1.221575	1.223654	1.225588	1.227385	1.229053	1.230600	1.232034	1.233357	54
53	.221125	.223154	.225041	.226794	.228417	.229920	.231311	.232593	53
52	.220593	.222573	.224412	.226118	.227694	.229152	.230500	.231740	52
51	.219975	.221904	.223694	.225350	.226877	.228290	.229593	.230787	51
50	.219263	.221140	.222877	.224480	.225962	.227327	.228581	.229741	50
49	1.218450	1.220271	1.221953	1.223508	1.224938	1.226251	1.227470	1.228586	49
48	.217526	.219288	.220919	.222420	.223795	.225070	.226242	.227315	48
47	.216480	.218188	.219761	.221204	.222538	.223765	.224891	.225923	47
46	.215309	.216956	.218467	.219867	.221151	.222329	.223412	.224401	46
45	.213998	.215579	.217045	.218391	.219623	.220755	.221794	.222743	45
	25	24	23	22	21	20	19	18	

TABLE XLVI.

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

5 PER CENT.

Payments. n.	x=90	91	92	93	94	95	96	97	Payments. n.
n.	0.397160	0.368711	0.340242	0.310847	0.280937	0.249611	0.212464	0.176638	n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.214806	.207072	.198987	.189664	.179538	.169142	.152340	.140179	2
3	.307656	.293579	.278635	.261970	.244460	.224344	.198721	.176638	3
4	.353712	.334538	.314318	.292583	.269086	.243655	.212464	**10**	4
5	0.377006	0.354101	0.330417	0.304829	0.278110	0.249611	**11**		5
6	.388464	.363173	.336984	.309403	.280937	**12**		1.249190	90
7	.393850	.366849	.339458	.310847	**13**		1.248018	.249191	89
8	.396046	.368262	.340242	**14**		1.246787	.248019	.249191	88
9	.396892	.368711	**15**		1.245487	.246788	.248019	.249191	87
10	0.397160	**16**		1.244118	.245488	.246788	.248019	.249190	86
	17		1.242680	.244119	.245488	.246788	.248019	.249190	85
		1.241169	.242682	.244119	.245488	.246788	.248018	.249188	84
83	1.239571	.241169	.242682	.244119	.245488	.246787	.248016	.249186	83
82	.239572	.241169	.242682	.244119	.245487	.246785	.248014	.249182	82
81	.239572	.241169	.242682	.244118	.245485	.246783	.248010	.249179	81
80	.239572	.241169	.242681	.244116	.245482	.246778	.248007	.249170	80
79	1.239572	1.241168	1.242678	1.244113	1.245477	1.246775	1.247997	1.249156	79
78	.239571	.241165	.242675	.244107	.245474	.246764	.247982	.249139	78
77	.239568	.241162	.242669	.244104	.245463	.246749	.247964	.249115	77
76	.239565	.241156	.242666	.244092	.245447	.246729	.247939	.249083	76
75	.239558	.241152	.242653	.244075	.245426	.246703	.247905	.249041	75
74	1.239554	1.241139	1.242635	1.244053	1.245398	1.246667	1.247860	1.248986	74
73	.239540	.241119	.242612	.244023	.245360	.246620	.247802	.248917	73
72	.239519	.241095	.242580	.243983	.245310	.246558	.247730	.248827	72
71	.239494	.241061	.242537	.243930	.245244	.246481	.247633	.248721	71
70	.239458	.241016	.242481	.243860	.245162	.246379	.247521	.248591	70
69	1.239410	1.240955	1.242406	1.243773	1.245055	1.246260	1.247383	1.248433	69
68	.239345	.240877	.242314	.243660	.244928	.246113	.247216	.248250	68
67	.239262	.240779	.242195	.243525	.244773	.245937	.247023	.248032	67
66	.239158	.240652	.242051	.243360	.244586	.245732	.246791	.247781	66
65	.239024	.240500	.241877	.243163	.244368	.245486	.246525	.247491	65
64	1.238863	1.240315	1.241668	1.242932	1.244108	1.245204	1.246217	1.247160	64
63	.238667	.240094	.241422	.242656	.243809	.244878	.245866	.246782	63
62	.238432	.239832	.241130	.242338	.243463	.244506	.245466	.246359	62
61	.238154	.239523	.240792	.241972	.243068	.244082	.245017	.245882	61
60	.237826	.239164	.240404	.241553	.242619	.243606	.244512	.245352	60
59	1.237445	1.238752	1.239959	1.241076	1.242114	1.243070	1.243950	1.244761	59
58	.237008	.238281	.239454	.240541	.241546	.242474	.243322	.244109	58
57	.236508	.237745	.238886	.239938	.240914	.241808	.242632	.243391	57
56	.235939	.237142	.238247	.239268	.240207	.241076	.241871	.242604	56
55	.235299	.236464	.237535	.238518	.239431	.240269	.241035	.241741	55
54	1.234580	1.235708	1.236739	1.237694	1.238575	1.239383	1.240120	1.240799	54
53	.233776	.234863	.235865	.236786	.237604	.238411	.239120	.239775	53
52	.232879	.233935	.234901	.235787	.236603	.237350	.238034	.238662	52
51	.231894	.232912	.233840	.234693	.235477	.236198	.236853	.237455	51
50	.230807	.231785	.232679	.233498	.234254	.234944	.235572	.236152	50
49	1.229610	1.230552	1.231410	1.232199	1.232923	1.233585	1.234189	1.234744	49
48	.228301	.229205	.230030	.230785	.231479	.232116	.232694	.233225	48
47	.226869	.227738	.228528	.229252	.229920	.230528	.231081	.231588	47
46	.225310	.226142	.226899	.227595	.228232	.228815	.229342	.229827	46
45	.223614	.224410	.225138	.225801	.226412	.226967	.227472	.227936	45
	17	16	15	14	13	12	11	10	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

The first Value under the Age x is $\lambda(1+a_x)$ for the whole Life.   **6 PER CENT.**

Pay-ments.	$x=10$	11	12	13	14	15	16	17	Pay-ments.
$n.$	1.189964	1.189102	1.188192	1.187226	1.186201	1.185120	1.183972	1.182755	$n.$
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.287194	.287188	.287185	.287181	.287174	.287169	.287165	.287158	2
3	.449596	.449587	.449581	.449571	.449559	.449549	.449538	.449524	3
4	.560996	.560984	.560972	.560957	.560939	.560923	.560907	.560886	4
5	0.644517	0.644499	0.644483	0.644462	0.644439	0.644419	0.644395	0.644366	5
6	.710457	.710435	.710413	.710387	.710360	.710332	.710301	.710264	6
7	.764310	.764283	.764256	.764227	.764192	.764157	.764119	.764074	7
8	.809356	.809323	.809294	.809257	.809216	.809174	.809128	.809075	8
9	.847709	.847674	.847637	.847594	.847546	.847497	.847444	.847383	9
10	0.880815	0.880773	0.880731	0.880682	0.880627	0.880572	0.880511	0.880439	10
11	.909701	.909654	.909606	.909550	.909490	.909426	.909355	.909277	11
12	.935128	.935076	.935021	.934960	.934891	.934819	.934742	.934650	12
13	.957674	.957615	.957555	.957486	.957409	.957331	.957241	.957142	13
14	.977784	.977721	.977654	.977577	.977495	.977404	.977308	.977197	14
15	0.995818	0.995747	0.995673	0.995591	0.995496	0.995400	0.995293	0.995171	15
16	1.012057	1.011981	1.011901	1.011807	1.011708	1.011602	1.011483	1.011349	16
17	.026739	.026656	.026565	.026468	.026359	.026242	.026112	.025972	17
18	.040054	.039962	.039869	.039762	.039642	.039514	.039378	.039218	18
19	.052165	.052069	.051966	.051849	.051719	.051585	.051431	.051263	19
20	1.063211	0.063107	1.062995	1.062867	1.062732	1.062581	1.062420	1.062235	20
21	.073305	.073193	.073070	.072939	.072788	.072630	.072452	.072256	21
22	.082549	.082426	.082300	.082153	.081995	.081822	.081635	.081421	22
23	.091026	.090900	.090759	.090606	.090434	.090252	.090047	.089827	23
24	.098818	.098678	.098532	.098366	.098185	.097987	.097776	.097535	24
25	1.105982	1.105838	1.105679	1.105504	1.105308	1.105104	1.104873	1.104621	25
26	.112585	.112429	.112261	.112073	.111871	.111649	.111407	.111134	26
27	.118671	.118506	.118327	.118132	.117914	.117680	.117420	.117129	27
28	.124289	.124113	.123927	.123716	.123488	.123238	.122960	.122656	28
29	.129478	.129295	.129095	.128875	.128630	.128363	.128073	.127751	29
30	1.134277	1.134081	1.133872	1.133637	1.133376	1.133097	1.132791	1.132449	30
31	.138712	.138509	.138286	.138035	.137764	.137470	.137145	.136787	31
32	.142821	.142604	.142366	.142105	.141820	.141508	.141168	.140788	32
33	.146622	.146391	.146144	.145870	.145568	.145242	.144881	.144484	33
34	.150141	.149901	.149640	.149352	.149036	.148690	.148313	.147891	34
35	1.153403	1.153150	1.152877	1.152574	1.152240	1.151880	1.151479	1.151038	35
36	.156424	.156160	.155873	.155554	.155206	.154823	.154405	.153943	36
37	.159226	.158948	.158645	.158313	.157944	.157545	.157106	.156621	37
38	.161821	.161529	.161213	.160862	.160478	.160058	.159599	.159093	38
39	.164224	.163920	.163587	.163221	.162817	.162380	.161900	.161371	39
40	1.166452	1.166132	1.165785	1.165400	1.164980	1.164523	1.164021	1.163468	40
41	.168514	.168180	.167815	.167415	.166977	.166498	.165975	.165396	41
42	.170423	.170072	.169694	.169277	.168818	.168319	.167771	.167170	42
43	.172188	.171825	.171430	.170994	.170515	.169994	.169425	.168798	43
44	.173823	.173444	.173032	.172576	.172077	.171537	.170943	.170290	44
	10	11	12	13	14	15	16	17	

FORMULA, $\lambda(1+a_x^{n-1}) = \lambda \dfrac{N_x - N_{x+n}}{D_x} = \lambda \dfrac{a_{x-1}^n}{v p_{x-1}}.$

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. n.	$x=18$	19	20	21	22	23	24	25	Pay-ments. n.
	1.181467	1.180102	1.178657	1.177130	1.175513	1.173803	1.171993	1.170082	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.287151	.287143	.287133	.287123	.287113	.287101	.287088	.287076	2
3	.449510	.449493	.449474	.449455	.449433	.449410	.449385	.449358	3
4	.560863	.560838	.560809	.560779	.560748	.560712	.560672	.560629	4
5	0.644335	0.644301	0.644262	0.644223	0.644179	0.644129	0.644075	0.644017	5
6	.710225	.710181	.710134	.710082	.710025	.709962	.709894	.709818	6
7	.764026	.763974	.763914	.763851	.763781	.763705	.763620	.763526	7
8	.809019	.808955	.808885	.808809	.808727	.808635	.808533	.808423	8
9	.847316	.847243	.847160	.847072	.846975	.846868	.846750	.846621	9
10	0.880364	0.880277	0.880184	0.880083	0.879971	0.879848	0.879713	0.879565	10
11	.909188	.909092	.908986	.908870	.908745	.908605	.908452	.908282	11
12	.934553	.934445	.934325	.934196	.934055	.933898	.933724	.933534	12
13	.957033	.956912	.956779	.956636	.956478	.956301	.956109	.955898	13
14	.977076	.976943	.976797	.976638	.976462	.976267	.976055	.975816	14
15	0.995038	0.994897	0.994732	0.994556	0.994362	0.994149	0.993910	0.993659	15
16	1.011210	1.011046	1.010870	1.010676	1.010465	1.010228	1.009977	1.009696	16
17	.025811	.025637	.025443	.025234	.025001	.024752	.024472	.024171	17
18	.039048	.038857	.038649	.038419	.038174	.037898	.037600	.037264	18
19	.051076	.050872	.050644	.050403	.050133	.049839	.049508	.049149	19
20	1.062036	1.061813	1.061575	1.061310	1.061023	1.060699	1.060346	1.059960	20
21	.072039	.071807	.071546	.071266	.070950	.070605	.070227	.069813	21
22	.081196	.080942	.080667	.080359	.080023	.079654	.079251	.078806	22
23	.089580	.089313	.089012	.088685	.088327	.087934	.087501	.087030	23
24	.097276	.096985	.096665	.096318	.095937	.095516	.095058	.094549	24
25	1.104340	1.104030	1.103692	1.103323	1.102916	1.102472	1.101979	1.101446	25
26	.110835	.110508	.110149	.109756	.109327	.108850	.108334	.107758	26
27	.116815	.116469	.116087	.115672	.115213	.114714	.114157	.113549	27
28	.122323	.121955	.121553	.121110	.120629	.120093	.119506	.118864	28
29	.127397	.127011	.126582	.126119	.125603	.125038	.124419	.123741	29
30	1.132078	1.131667	1.131219	1.130723	1.130180	1.129585	1.128932	1.128216	30
31	.136393	.135963	.135484	.134963	.134392	.133764	.133076	.132325	31
32	.140376	.139917	.139415	.138867	.138265	.137605	.136884	.136091	32
33	.144045	.143564	.143037	.142461	.141828	.141137	.140376	.139542	33
34	.147432	.146928	.146373	.145767	.145106	.144378	.143578	.142706	34
35	1.150557	1.150026	1.149445	1.148812	1.148116	1.147351	1.146516	1.145601	35
36	.153436	.152881	.152275	.151609	.150878	.150080	.149205	.148247	36
37	.156092	.155513	.154875	.154177	.153415	.152579	.151664	.150663	37
38	.158540	.157932	.157264	.156536	.155739	.154866	.153910	.152866	38
39	.160792	.160155	.159459	.158698	157867	.156955	.155959	.154871	39
40	1.162862	1.162199	1.161472	1.160679	1.159811	1.158861	1.157824	1.156690	40
41	.164765	.164073	.163316	.162489	.161585	.160598	.159517	.158343	41
42	.166512	.165791	.165002	.164141	.163203	.162174	.161055	.159825	42
43	.168113	.167362	.166542	.165649	.164670	.163606	.162435	.161174	43
44	.169577	.168798	.167947	.167016	.166005	.164892	.163692	.162381	44
	18	19	20	21	22	23	24	25	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. n.	26	27	28	29	30	31	32	33	Pay-ments. n.
	1.168055	1.165920	1.163661	1.161274	1.158757	1.156097	1.153290	1.150327	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.287059	.287043	.287025	.287002	.286980	.286955	.286929	.286899	2
3	.449323	.449290	.449251	.449207	.449162	.449113	.449058	.448997	3
4	.560579	.560526	.560467	.560401	.560333	.560256	.560172	.560076	4
5	0.643948	0.643876	0.643796	0.643708	0.643614	0.643509	0.643393	0.643263	5
6	.709730	.709639	.709538	.709425	.709304	.709170	.709021	.708858	6
7	.763421	.763309	.763185	.763046	.762898	.762733	.762552	.762350	7
8	.808298	.808165	.808015	.807851	.807674	.807478	.807261	.807023	8
9	.846476	.846318	.846146	.845954	.845748	.845518	.845267	.844989	9
10	0.879396	0.879218	0.879018	0.878800	0.878561	0.878299	0.878010	0.877689	10
11	.908093	.907889	.907664	.907415	.907145	.906855	.906518	.906156	11
12	.933322	.933094	.932841	.932561	.932266	.931923	.931554	.931148	12
13	.955656	.955408	.955125	.954822	.954477	.954104	.953694	.953242	13
14	.975561	.975279	.974973	.974624	.974250	.973838	.973385	.972884	14
15	0.993372	0.993068	0.992720	0.992342	0.991932	0.991480	0.990980	0.990433	15
16	1.009388	1.009044	1.008669	1.008257	1.007809	1.007313	1.006770	1.006170	16
17	.023826	.023456	.023049	.022602	.022113	.021575	.020982	.020330	17
18	.036894	.036494	.036054	.035568	.035039	.034454	.033813	.033107	18
19	.048751	.048320	.047843	.047324	.046746	.046117	.045424	.044661	19
20	1.059533	1.059067	1.058559	1.057989	1.057375	1.056696	1.055949	1.055129	20
21	.069353	.068858	.068302	.067698	.067037	.066307	.065507	.064628	21
22	.078318	.077778	.077190	.076542	.075832	.075053	.074198	.073257	22
23	.086500	.085936	.085301	.084606	.083850	.083020	.082105	.081104	23
24	.093996	.093381	.092708	.091970	.091166	.090278	.089309	.088243	24
25	1.100846	1.100196	1.099482	1.098699	1.097840	1.096902	1.095871	1.094736	25
26	.107124	.106436	.105679	.104845	.103939	.102943	.101846	.100645	26
27	.112880	.112151	.111346	.110468	.109508	.108449	.107291	.106024	27
28	.118156	.117383	.116537	.115607	.114589	.113472	.112252	.110912	28
29	.122993	.122180	.121285	.120301	.119228	.118053	.116765	.115353	29
30	1.127430	1.126571	1.125625	1.124591	1.123462	1.122224	1.120868	1.119385	30
31	.131495	.130588	.129596	.128508	.127321	.126019	.124596	.123040	31
32	.135216	.134267	.133224	.132081	.130834	.129469	.127978	.126346	32
33	.138627	.137629	.136535	.135336	.134029	.132601	.131038	.129332	33
34	.141745	.140700	.139553	.138298	.136932	.135436	.133804	.132022	34
35	1.144595	1.143500	1.142301	1.140990	1.139561	1.138000	1.136297	1.134440	35
36	.147195	.146052	.144799	.143430	.141940	.140313	.138539	.136607	36
37	.149566	.148372	.147064	.145639	.144086	.142393	.140549	.138540	37
38	.151722	.150476	.149117	.147622	.146017	.144258	.142342	.140261	38
39	.153678	.152385	.150959	.149425	.147749	.145922	.143939	.141784	39
40	1.155454	1.154097	1.152635	1.151034	1.149295	1.147406	1.145353	1.143127	40
41	.157046	.155655	.154131	.152471	.150674	.148719	.146600	.144305	41
42	.158496	.157047	.155467	.153754	.151895	.149877	.147695	.145328	42
43	.159791	.158290	.156661	.154889	.152970	.150895	.148644	.146216	43
44	.160948	.159402	.157717	.155889	.153917	.151777	.149470	.146977	44
	26	27	28	29	30	31	32	33	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. n.	$x=34$ 1.147200	35 1.143903	36 1.140434	37 1.136773	38 1.132914	39 1.128852	40 1.124576	41 1.120076	Pay-ments. n.
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.286866	.286826	.286789	.286747	.286697	.286643	.286584	.286522	2
3	.448926	.448850	.448773	.448684	.448583	.448475	.448355	.448225	3
4	.559971	.559856	.559735	.559598	.559446	.559279	.559096	.558898	4
5	0.643122	0.642965	0.642799	0.642614	0.642406	0.642179	0.641931	0.641661	5
6	.708676	.708478	.708266	.708028	.707762	.707475	.707159	.706811	6
7	.762130	.761888	.761626	.761333	.761011	.760659	.760269	.759846	7
8	.806761	.806471	.806158	.805812	.805429	.805007	.804546	.804042	8
9	.844681	.844344	.843980	.843577	.843127	.842638	.842102	.841512	9
10	0.877337	0.876951	0.876533	0.876067	0.875554	0.874994	0.874376	0.873702	10
11	.905757	.905320	.904844	.904318	.903737	.903101	.902403	.901637	11
12	.930701	.930209	.929677	.929086	.928434	.927722	.926937	.926080	12
13	.952744	.952199	.951605	.950947	.950224	.949429	.948559	.947603	13
14	.972336	.971733	.971076	.970351	.969550	.968675	.967712	.966658	14
15	0.989829	0.989167	0.988446	0.987648	0.986771	0.985809	0.984754	0.983601	15
16	1.005511	1.004788	1.003999	1.003129	1.002170	1.001121	.999973	.998712	16
17	.019614	.018827	.017970	.017023	.015983	.014846	1.013596	1.012227	17
18	.032330	.031480	.030550	.029527	.028403	.027171	.025819	.024338	18
19	.043824	.042905	.041993	.040802	.039589	.038260	.036804	.035217	19
20	1.054229	1.053242	1.052167	1.050982	1.049677	1.048251	1.046694	1.044982	20
21	.063663	.062607	.061453	.060182	.058786	.057265	.055591	.053763	21
22	.072227	.071097	.069863	.068505	.067020	.065390	.063606	.061657	22
23	.080005	.078799	.077483	.076042	.074455	.072721	.070825	.068755	23
24	.087072	.085789	.084395	.082858	.081173	.079334	.077324	.075128	24
25	1.093493	1.092136	1.090654	1.089024	1.087241	1.085295	1.083167	1.080844	25
26	.099333	.097893	.096322	.094602	.092718	.090661	.088414	.085965	26
27	.104634	.103112	.101456	.099641	.097653	.095484	.093119	.090545	27
28	.109446	.107843	.106098	.104185	.102093	.099814	.097332	.094629	28
29	.113810	.112125	.110288	.108278	.106081	.103693	.101091	.098256	29
30	1.117764	1.115993	1.114065	1.111956	1.109658	1.107157	1.104432	1.101474	30
31	.121339	.119482	.117462	.115258	.112854	.110238	.107397	.104311	31
32	.124565	.122622	.120512	.118210	.115698	.112974	.110013	.106807	32
33	.127470	.125442	.123241	.120837	.118226	.115389	.112316	.108990	33
34	.130080	.127967	.125671	.123175	.120457	.117516	.114331	.110885	34
35	1.132419	1.130217	1.127834	1.125238	1.122423	1.119377	1.116080	1.112524	35
36	.134503	.132220	.129744	.127057	.124144	.120994	.117594	.113929	36
37	.136359	.133990	.131429	.128650	.125639	.122393	.118892	.115126	37
38	.138000	.135551	.132904	.130034	.126934	.123593	.119998	.116131	38
39	.139448	.136919	.134186	.131233	.128044	.124616	.120927	.116975	39
40	1.140717	1.138107	1.135297	1.132261	1.128991	1.125476	1.121707	1.117669	40
41	.141819	.139137	.136250	.133138	.129788	.126197	.122349	.118236	41
42	.142775	.140021	.137063	.133877	.130455	.126791	.122873	.118690	42
43	.143595	.140775	.137748	.134495	.131005	.127276	.123293	.119054	43
44	.144295	.141411	.138321	.135004	.131454	.127665	.123629	.119335	44
	34	35	36	37	38	39	40	41	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. $n.$	42	43	44	45	46	47	48	49	Pay-ments. $n.$
	1.115337	1.110361	1.105124	1.099624	1.093846	1.087778	1.081412	1.074733	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.286448	.286374	.286287	.286192	.286090	.285975	.285852	.285715	2
3	.448079	.447923	.447747	.447556	.447345	.447113	.446859	.446580	3
4	.558674	.558434	.558166	.557873	.557551	.557196	.556808	.556380	4
5	0.641356	0.641030	0.640665	0.640267	0.639830	0.639347	0.638819	0.638237	5
6	.706426	.706008	.705544	.705037	.704479	.703865	.703191	.702450	6
7	.759374	.758863	.758296	.757675	.756992	.756241	.755417	.754513	7
8	.803481	.802873	.802198	.801459	.800647	.799755	.798777	.797703	8
9	.840861	.840150	.839364	.838504	.837558	.836521	.835384	.834132	9
10	0.872953	0.872139	0.871238	0.870252	0.869171	0.867982	0.866678	0.865245	10
11	.900791	.899867	.898848	.897735	.896510	.895165	.893689	.892073	11
12	.925129	.924095	.922956	.921708	.920337	.918829	.917182	.915374	12
13	.946549	.945492	.944136	.942749	.941224	.939566	.937729	.935723	13
14	.965498	.964231	.962834	.961303	.959637	.957791	.955777	.953571	14
15	0.982327	0.980937	0.979405	0.977741	0.975899	0.973886	0.971685	0.969273	15
16	.997323	.995806	.994148	.992319	.990321	.988132	.985737	.983119	16
17	1.010718	1.009083	1.007271	1.005295	1.003131	1.000761	.998173	.995338	17
18	.022718	.020938	.018988	.016856	.014523	.011972	1.009180	1.006134	18
19	.033462	.031552	.029455	.027166	.024662	.021920	.018931	.015668	19
20	1.043104	1.041056	1.038813	1.036362	1.033679	1.030753	1.027562	1.024079	20
21	.051756	.049571	.047176	.044558	.041702	.038587	.035190	.031487	21
22	.059522	.057194	.054643	.051863	.048831	.045523	.041920	.037999	22
23	.066485	.064012	.061308	.058363	.055151	.051651	.047845	.043706	23
24	.072723	.070106	.067248	.064135	.060743	.057053	.053044	.048690	24
25	1.078304	1.075544	1.072529	1.069247	1.065678	1.061798	1.057589	1.053028	25
26	.083291	.080384	.077210	.073764	.070017	.065951	.061548	.056778	26
27	.087734	.084677	.081351	.077738	.073818	.069572	.064975	.060005	27
28	.091677	.088479	.084996	.081222	.077135	.072708	.067924	.062764	28
29	.095172	.091828	.088196	.084265	.080009	.075408	.070448	.065105	29
30	1.098253	1.094769	1.090991	1.086903	1.082485	1.077721	1.072591	1.067073	30
31	.100961	.097341	.093415	.089177	.084607	.079685	.074393	.068713	31
32	.103329	.099572	.095506	.091126	.086410	.081337	.075895	.070066	32
33	.105383	.101497	.097299	.092784	.087927	.082715	.077134	.071165	33
34	.107159	.103148	.098825	.094179	.089193	.083851	.078141	.072049	34
35	1.108682	1.104554	1.100109	1.095342	1.090236	1.084776	1.078952	1.072752	35
36	.109978	.105733	.101180	.096302	.091086	.085520	.079596	.073298	36
37	.111066	.106724	.102064	.097084	.091770	.086111	.080097	.073718	37
38	.111980	.107539	.102784	.097713	.092313	.086571	.080481	.074032	38
39	.112732	.108203	.103363	.098213	.092736	.086923	.080770	.074263	39
40	1.113345	1.108737	1.103824	1.098602	1.093059	1.087189	1.080982	1.074429	40
41	.113838	.109162	.104182	.098899	.093304	.087383	.081133	.074544	41
42	.114231	.109492	.104456	.099125	.093482	.087522	.081239	.074622	42
43	.114535	.109745	.104664	.099289	.093610	.087620	.081311	.074669	43
44	.114769	.109937	.104815	.099407	.093700	.087686	.081353	.074698	44
	42	43	44	45	46	47	48	49	

LIFE AND TEMPORARY ANNUITIES.   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. n.	$x=50$	51	52	53	54	55	56	57	Pay-ments. n.
	1.067728	1.060389	1.052701	1.044652	1.036227	1.027411	1.018200	1.008575	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.285563	.285397	.285214	.285015	.284796	.284553	.284288	.283991	2
3	.446270	.445932	.445561	.445155	.444709	.444213	.443670	.443073	3
4	.555907	.555391	.554825	.554205	.553521	.552763	.551937	.551026	4
5	0.637596	0.636896	0.636128	0.635284	0.634353	0.633329	0.632207	0.630974	5
6	.701636	.700745	.699766	.698688	.697509	.696206	.694781	.693215	6
7	.753519	.752429	.751230	.749920	.748476	.746889	.745152	.743244	7
8	.796521	.795225	.793807	.792249	.790537	.788657	.786599	.784343	8
9	.832757	.831254	.829604	.827793	.825807	.823625	.821241	.818624	9
10	0.863674	0.861954	0.860066	0.857998	0.855728	0.853240	0.850518	0.847537	10
11	.890299	.888355	.886225	.883890	.881334	.878529	.875466	.872112	11
12	.913389	.911218	.908838	.906235	.903382	.900259	.896847	.893117	12
13	.933525	.931119	.928488	.925607	.922457	.919007	.915244	.911132	13
14	.951153	.948512	.945620	.942461	.939005	.935228	.931109	.926615	14
15	0.966634	0.963748	0.960596	0.957152	0.953390	0.949281	0.944806	0.939930	15
16	.980250	.977121	.973703	.969973	.965901	.961460	.956629	.951371	16
17	.992243	.988866	.985180	.981160	.976779	.972006	.966820	.961186	17
18	1.002807	.999179	.995223	.990914	.986224	.981121	.975587	.969579	18
19	.012106	1.008226	1.004001	.999405	.994408	.988981	.983100	.976731	19
20	1.020281	1.016150	1.011657	1.006776	1.001478	0.995729	0.989513	0.982792	20
21	.027455	.023074	.018316	.013155	.007558	1.001499	.994957	.987898	21
22	.033734	.029106	.024088	.018649	.012764	.006404	.999550	.992168	22
23	.039211	.034342	.029065	.023359	.017195	.010546	1.003394	.995707	23
24	.043972	.038862	.033336	.027372	.020941	.014017	.006583	.998615	24
25	1.048085	1.042744	1.036979	1.030767	1.024082	1.016898	1.009206	1.000974	25
26	.051621	.046058	.040064	.033617	.026692	.019269	.011334	.002867	26
27	.054642	.048867	.042655	.035986	.028841	.021194	.013043	.004363	27
28	.057204	.051227	.044810	.037938	.030585	.022741	.014394	.005528	28
29	.059357	.053191	.046586	.039522	.031988	.023964	.015447	.006418	29
30	1.061150	1.054810	1.048028	1.040797	1.033098	1.024917	1.016251	1.007085	30
31	.062629	.056125	.049189	.041806	.033963	.025645	.016853	.007576	31
32	.063830	.057183	.050108	.042593	.034624	.026191	.017297	.007928	32
33	.064797	.058022	.050824	.043194	.035119	.026593	.017616	.008173	33
34	.065564	.058675	.051372	.043644	.035484	.026882	.017837	.008336	34
35	1.066161	1.059176	1.051783	1.043976	1.035746	1.027082	1.017985	1.008440	35
36	.066619	.059551	.052085	.044215	.035928	.027216	.018079	.008503	36
37	.066962	.059827	.052302	.044380	.036049	.027301	.018135	.008539	37
38	.067214	.060025	.052453	.044490	.036127	.027352	.018169	.008558	38
39	.067395	.060163	.052554	.044561	.036173	.027383	.018185	.008567	39
40	1.067521	1.060255	1.052618	1.044603	1.036201	1.027397	1.018193	1.008572	40
41	.067606	.060313	.052656	.044629	.036214	.027404	.018198	.008575	41
42	.067658	.060348	.052680	.044641	.036220	.027409	.018200	.008575	42
43	.067690	.060370	.052691	.044646	.036225	.027410	.018200	.008575	43
44	.067710	.060380	.052695	.044651	.036226	.027410	.018200		44
45	1.067719	1.060383	1.052700	1.044652	1.036226	1.027411			45
46	.067722	.060388	.052701	.044652	.036227				46
47	.067727	.060389	.052701						47
48	.067728	.060389							48
49	.067728								49
	50	51	52	53	54	55	56	57	

TABLE XLVII. *89

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Payments. $n.$	58	59	60	61	62	63	64	65	Payments. $n.$
	0.998532	0.988049	0.977114	0.965719	0.953857	0.941502	0.928659	0.915312	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.283673	.283321	.282933	.282505	.282040	.281525	.280960	.280338	2
3	.442422	.441706	.440916	.440049	.439104	.438057	.436911	.435652	3
4	.550033	.548939	.547736	.546419	.544975	.543385	.541642	.539730	4
5	0.629627	0.628145	0.626519	0.624735	0.622783	0.620634	0.618282	0.615705	5
6	.691504	.689626	.687562	.685303	.682828	.680110	.677137	.673883	6
7	.741161	.738873	.736365	.733616	.730611	.727313	.723711	.719772	7
8	.781875	.779171	.776205	.772962	.769416	.765533	.761293	.756662	8
9	.815767	.812635	.809208	.805460	.801368	.796893	.792012	.786688	9
10	0.844280	0.840718	0.836820	0.832563	0.827923	0.822851	0.817329	0.811318	10
11	.868454	.864452	.860080	.855314	.850119	.844455	.838297	.831601	11
12	.889049	.884607	.879762	.874480	.868737	.862484	.855695	.848329	12
13	.906654	.901771	.896447	.890658	.884370	.877535	.870129	.862111	13
14	.921727	.916400	.910605	.904312	.897487	.890083	.882077	.873430	14
15	0.934630	0.928866	0.922604	0.915815	0.908466	0.900511	0.891928	0.882677	15
16	.945665	.939468	.932748	.925476	.917619	.909135	.900000	.890181	16
17	.955078	.948458	.941293	.933552	.925210	.916220	.906567	.896212	17
18	.963081	.956050	.948452	.940266	.931459	.921996	.911854	.901017	18
19	.969852	.962422	.954415	.945802	.936563	.926654	.916073	.904792	19
20	0.975546	0.967739	0.959340	0.950331	0.940684	0.930376	0.919392	0.907716	20
21	.980303	.972136	.963374	.953992	.943982	.933306	.921966	.909944	21
22	.984242	.975742	.966638	.956924	.946579	.935580	.923927	.911611	22
23	.987476	.978662	.969254	.959236	.948596	.937315	.925396	.912831	23
24	.990096	.981004	.971319	.961032	.950137	.938615	.926471	.913705	24
25	0.992199	0.982853	0.972923	0.962404	0.951291	0.939565	0.927242	0.914315	25
26	.993860	.984291	.974149	.963432	.952135	.940248	.927780	.914720	26
27	.995153	.985389	.975068	.964185	.952742	.940724	.928137	.914978	27
28	.996140	.986213	.975742	.964726	.953165	.941040	.928364	.915133	28
29	.996880	.986818	.976225	.965103	.953445	.941241	.928501	.915222	29
30	0.997425	0.987252	0.976563	0.965352	0.953624	0.941471	0.928580	0.915271	30
31	.997815	.987555	.976785	.965512	.953828	.941433	.928623	.915292	31
32	.998087	.987754	.976929	.965694	.953795	.941454	.928641	.915307	32
33	.998266	.987883	.977091	.965665	.953813	.941487	.928655	.915313	33
34	.998383	.988028	.977065	.965681	.953843	.941499	.928660	.915313	34
35	0.998513	0.988005	0.977079	0.965708	0.953853	0.941503	0.928660	0.915312	35
36	.998492	.988017	.977103	.965717	.953857	.941503	.928659		36
37	.998503	.988039	.977111	.965720	.953857	.941502		[42]	37
38	.998523	.988046	.977114	.965720	.953857		[43]	1.115337	58
39	.998529	.988049	.977114	.965719		[44]	1.110361	.115337	57
40	0.998532	0.988049	0.977114		[45]	1.105124	.110361	.115337	56
41	.998532	.988049		[46]	1.099624	.105124	.110361	.115337	55
42	.998532		[47]	1.093846	1.099624	1.105124	1.110361	.115333	54
		[48]	1.087778	.093846	.099624	.105124	.110357	.115333	53
	[49]	1.081412	.087778	.093846	.099623	.105120	.110357	.115328	52
51	1.074733	.081412	.087778	.093845	.099619	.105120	.110351	.115317	51
50	.074733	.081412	.087777	.093841	.099619	.105113	.110340	.115302	50
49	1.074733	1.081411	1.087773	1.093840	1.099612	1.105101	1.110323	1.115277	49
48	.074732	.081406	.087772	.093833	.099599	.105083	.110296	.115233	48
47	.074727	.081405	.087764	.093819	.099579	.105053	.110248	.115167	47
46	.074725	.081396	.087749	.093797	.099546	.105001	.110176	.115074	46
45	.074716	.081380	.087725	.093761	.099490	.104924	.110076	.114946	45
	49	48	47	46	45	44	43	42	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Payments. n	$x=66$	67	68	69	70	71	72	73	Payments. n
	0.901459	0.887078	0.872181	0.856733	0.840762	0.824241	0.807180	0.789571	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.279660	.278908	.278097	.277190	.276207	.275121	.273936	.272640	2
3	.434275	.432761	.431109	.429283	.427295	.425110	.422726	.420111	3
4	.537641	.535345	.532840	.530080	.527074	.523780	.520183	.516248	4
5	0.612888	0.609799	0.606427	0.602724	0.598694	0.594284	0.589474	0.584227	5
6	.670330	.666436	.662192	.657542	.652485	.646959	.640949	.634404	6
7	.715472	.710770	.705653	.700056	.693975	.687351	.680156	.672342	7
8	.751614	.746106	.740116	.733580	.726492	.718788	.710440	.701403	8
9	.780896	.774584	.767731	.760272	.752199	.743446	.733991	.723764	9
10	0.804784	0.797679	0.789981	0.781623	0.772595	0.762839	0.752312	0.741000	10
11	.824339	.816459	.807939	.798712	.788774	.778052	.766548	.754203	11
12	.840356	.831725	.822413	.812359	.801549	.789946	.777520	.764238	12
13	.853450	.844096	.834033	.823190	.811586	.799157	.785895	.771776	13
14	.864109	.854071	.843293	.831734	.819388	.806213	.792208	.777355	14
15	0.872733	0.862047	0.850622	0.838395	0.825383	0.811546	0.796892	0.781410	15
16	.879649	.868376	.856350	.843526	.829923	.815510	.800302	.784295	16
17	.885148	.873334	.860770	.847417	.833302	.818401	.802731	.786299	17
18	.889463	.877164	.864127	.850318	.835770	.820462	.804421	.787631	18
19	.892801	.880078	.866633	.852439	.837531	.821896	.805544	.788473	19
20	0.895343	0.882254	0.868466	0.853952	0.838757	0.822850	0.806255	0.788982	20
21	.897243	.883846	.869774	.855007	.839572	.823454	.806684	.789275	21
22	.898633	.884984	.870687	.855708	.840090	.823819	.806931	.789433	22
23	.899628	.885779	.871294	.856154	.840402	.824029	.807065	.789500	23
24	.900323	.886307	.871680	.856423	.840581	.824143	.807122	.789552	24
25	0.900785	0.886643	0.871912	0.856577	0.840678	0.824191	0.807165	0.789568	25
26	.901078	.886844	.872046	.856660	.840720	.824228	.807179	.789573	26
27	.901254	.886961	.872118	.856697	.840751	.824240	.807183	.789571	27

n	66	67	68	69	70	71	72	73	n
28	.901356	.887024	.872150	.856723	.840762	.824243	.807180	**34**	
29	.901412	.887052	.872172	.856733	.840764	.824241	**35**		
30	0.901436	0.887071	0.872181	0.856734	0.840762	**36**		1.147200	66
31	.901453	.887079	.872182	.856733	**37**		1.143903	.147198	65
32	.901460	.887079	.872181	**38**		1.140434	1.143902	.147198	64
33	.901460	.887078	**39**		1.136773	.140433	.143902	.147198	63
34	.901459	**40**		1.132914	.136773	.140433	.143902	.147197	62
	41		1.128852	.132913	.136773	.140433	.143901	.147197	61
		1.124576	.128851	.132913	.136773	.140432	.143901	.147195	60
59	1.120076	1.124575	1.128851	1.132913	1.136771	1.140432	1.143898	1.147188	59
58	120076	.124575	.128851	.132911	.136771	.140428	.143891	.147181	58
57	.120076	.124575	.128849	.132911	.136767	.140421	.143883	.147167	57
56	.120076	.124572	.128849	.132907	.136760	.140412	.143868	.147142	56
55	.120073	.124572	.128844	.132899	.136750	.140397	.143842	.147107	55
54	1.120073	1.124567	1.128836	1.132888	1.136733	1.140368	1.143804	1.147056	54
53	.120068	.124558	.128824	.132870	.136702	.140327	.143749	.146987	53
52	.120058	.124545	.128804	.132837	.136658	.140268	.143675	.146891	52
51	.120044	.124524	.128769	.132790	.136594	.140189	.143570	.146765	51
50	.120021	.124486	.128718	.132720	.136509	.140075	.143435	.146599	50
49	1.119980	1.124430	1.128643	1.132628	1.136386	1.139929	1.143257	1.146385	49
48	.119919	.124350	.128543	.132496	.136228	.139737	.143026	.146119	48
47	.119833	.124241	.128401	.132325	.136022	.139489	.142739	.145786	47
46	.119715	.124089	.128216	.132103	.135754	.139179	.142381	.145379	46
45	.119551	.123889	.127976	.131814	.135420	.138793	.141943	.144886	45
	41	**40**	**39**	**38**	**37**	**36**	**35**	**34**	

TABLE XLVII. *91

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n
ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments. $n.$	74	75	76	77	78	79	80	81	Pay-ments. $n.$
	0.771402	0.752711	0.733470	0.713672	0.693356	0.672502	0.651114	0.629190	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.271204	.269646	.267945	.266064	.264019	.261782	.259335	.256690	2
3	.417238	.414120	.410707	.406961	.402891	.398447	.393621	.388367	3
4	.511942	.507265	.502157	.496577	.490520	.483943	.476798	.469061	4
5	0.578498	0.572282	0.565525	0.558147	0.550179	0.541542	0.532205	0.522129	5
6	.627277	.619569	.611186	.602107	.592309	.581737	.570351	.558124	6
7	.663864	.654696	.644789	.634083	.622576	.610209	.596956	.582800	7
8	.691612	.681078	.669724	.657506	.644426	.630436	.615521	.599672	8
9	.712756	.700933	.688242	.674642	.660148	.644724	.628364	.611079	9
10	0.728834	0.715826	0.701919	0.687086	0.671351	0.654689	0.637113	0.618529	10
11	.740985	.726906	.711919	.696009	.679211	.661516	.642856	.623185	11
12	.750074	.735048	.719124	.702298	.684619	.666013	.646457	.625980	12
13	.756780	.740935	.724219	.706638	.688190	.668840	.648623	.627578	13
14	.761642	.745110	.727744	.709510	.690438	.670543	.649863	.628445	14
15	0.765097	0.748002	0.730080	0.711320	0.691795	0.671518	0.650536	0.628809	15
16	.767494	.749922	.731553	.712413	.692572	.672048	.650818	.629089	16
17	.769086	.751134	.732443	.713040	.692994	.672270	.651035	.629177	17
18	.770092	.751866	.732955	.713380	.693171	.672440	.651104	.629208	18
19	.770700	.752287	.733232	.713523	.693306	.672495	.651128	.629190	19
20	0.771049	0.752515	0.733348	0.713632	0.693350	0.672514	0.651114	26	20
21	.771239	.752611	.733437	.713667	.693365	.672502			21
22	.771319	.752684	.733466	.713679	.693356		27		22
23	.771380	.752708	.733476	.713672		28		1.168055	74
24	.771400	.752716	.733470		29		1.165920	.168054	73
25	0.771406	0.752711		30		1.163661	.165918	.168054	72
26	.771402		31		1.161274	.163659	.165918	.168054	71
		32		1.158757	.161272	.163659	.165918	.168053	70
	33		1.156097	1.158755	1.161272	1.163659	1.165917	1.168053	69
		1.153290	.156096	.158755	.161272	.163658	.165917	.168052	68
67	1.150327	.153289	.156096	.158755	.161271	.163658	.165916	.168049	67
66	.150325	.153289	.156096	.158754	.161271	.163657	.165912	.168045	66
65	.150325	.153289	.156095	.158754	.161269	.163653	.165908	.168037	65
64	1.150325	1.153288	1.156095	1.158752	1.161265	1.163648	1.165900	1.168024	64
63	.150324	.153288	.156093	.158747	.161260	.163640	.165885	.168002	63
62	.150324	.153286	.156087	.158742	.161251	.163624	.165862	.167973	62
61	.150322	.153279	.156082	.158732	.161234	.163599	.165831	.167935	61
60	.150315	.153274	.156071	.158714	.161208	.163566	.165790	.167881	60
59	1.150309	1.153262	1.156051	1.158686	1.161173	1.163522	1.165732	1.167810	59
58	.150296	.153240	.156022	.158649	.161125	.163459	.165656	.167718	58
57	.150273	.153209	.155982	.158597	.161058	.163378	.165557	.167600	57
56	.150240	.153166	.155926	.158525	.160971	.163271	.165431	.167448	56
55	.150193	.153106	.155849	.158431	.160855	.163131	.165268	.167260	55
54	1.150129	1.153023	1.155747	1.158307	1.160705	1.162961	1.165066	1.167031	54
53	.150039	.152914	.155614	.158146	.160522	.162744	.164820	.166754	53
52	.149922	.152770	.155441	.157949	.160290	.162480	.164523	.166422	52
51	.149769	.152585	.155229	.157700	.160006	.162162	.164167	.166029	51
50	.149569	.152357	.154962	.157395	.159664	.161780	.163745	.165570	50
49	1.149322	1.152069	1.154634	1.157027	1.159254	1.161326	1.163252	1.165031	49
48	.149013	.151717	.154239	.156586	.158766	.160797	.162674	.164416	48
47	.148634	.151292	.153765	.156063	.158198	.160177	.162013	.163705	47
46	.148177	.150782	.153202	.155452	.157533	.159467	.161250	.162899	46
45	.147628	.150177	.152545	.154737	.156769	.158647	.160385	.161983	45
	33	32	31	30	29	28	27	26	

TABLE XLVII.

LIFE AND TEMPORARY ANNUITIES   LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Payments. n.	x=82	83	84	85	86	87	88	89	Payments. n.
	0.606694	0.583647	0.559909	0.535453	0.510023	0.483173	0.454503	0.422455	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.253744	.250591	.247111	.243358	.239313	.234793	.230075	.222029	2
3	.382611	.376412	.369650	.362393	.354522	.345962	.335400	.320218	3
4	.460632	.451581	.441793	.431288	.420014	.406931	.390968	.370386	4
5	0.511220	0.499566	0.487020	0.473656	0.458801	0.441565	0.421437	0.396806	5
6	.544974	.530980	.516032	.499792	.481703	.461257	.438034	.410543	6
7	.567662	.551649	.534368	.515579	.494998	.472187	.446811	.417331	7
8	.582833	.564914	.545601	.524861	.502462	.478024	.451185	.420496	8
9	.592671	.573117	.552261	.530109	.506472	.480948	.453233	.421807	9
10	0.598793	0.578007	0.556044	0.532939	0.508142	0.482321	0.454083	0.422301	10
11	.602457	.580794	.558089	.534121	.509434	.482891	.454403	.422455	11
12	.604549	.582302	.558944	.535035	.509829	.483106	.454503	**18**	
13	.605683	.582934	.559606	.535316	.509977	.483173	**19**		
14	.606159	.583423	.559810	.535420	.510023	**20**			
15	0.606526	0.583574	0.559885	0.535453	**21**				
16	.606640	.583629	.559909	**22**					
17	.606681	.583647	**23**						
18	.606694	**24**							
	25								
							1.180102	1.181467	82
						1.178657	.180101	.181466	81
						.178656	.180101	.181466	80
					1.177130	.178656	.180101	.181466	79
				1.175513	.177128	.178656	.180101	.181466	78
			1.173803	.175512	.177128	.178656	.180101	.181466	77
		1.171993	.173802	.175512	.177128	.178656	.180101	.181466	76
75	1.170082	.171993	.173802	.175512	.177128	.178656	.180101	.181464	75
74	1.170080	1.171993	1.173802	1.175512	1.177128	1.178656	1.180099	1.181461	74
73	.170080	.171993	.173802	.175512	.177128	.178653	.180096	.181457	73
72	.170080	.171992	.173802	.175512	.177125	.178650	.180091	.181450	72
71	.170079	.171992	.173801	.175509	.177122	.178645	.180084	.181436	71
70	.170079	.171991	.173798	.175505	.177116	.178637	.180069	.181420	70
69	1.170078	1.171988	1.173794	1.175499	1.177108	1.178621	1.180052	1.181396	69
68	.170075	.171984	.173788	.175490	.177091	.178603	.180027	.181366	68
67	.170071	.171978	.173778	.175472	.177071	.178577	.179994	.181325	67
66	.170064	.171967	.173759	.175451	.177043	.178542	.179950	.181273	66
65	.170052	.171947	.173736	.175421	.177006	.178494	179894	.181205	65
64	1.170031	1.171922	1.173704	1.175381	1.176955	1.178434	1.179821	1.181118	64
63	.170004	.171888	.173661	.175327	.176891	.178356	.179729	.181009	63
62	.169968	.171842	.173604	.175258	.176807	.178257	.179612	.180876	62
61	.169918	.171780	.173529	.175168	.176701	.178132	.179470	.180719	61
60	.169852	.171700	.173433	.175055	.176567	.177980	.179301	.180526	60
59	1.169767	1.171598	1.173311	1.174911	1.176405	1.177799	1.179095	1.180302	59
58	.169657	.171466	.173157	.174737	.176210	.177579	.178855	.180037	58
57	.169515	.171302	.172971	.174528	.175975	.177321	.178571	.179729	57
56	.169340	.171102	.172747	.174276	.175698	.177017	.178241	.179376	56
55	.169126	.170862	.172477	.173979	.175373	.176664	.177863	.178967	55
54	1.168868	1.170573	1.172159	1.173632	1.174995	1.176259	1.177426	1.178504	54
53	.168558	.170232	.171787	.173226	.174561	.175791	.176930	.177980	53
52	.168192	.169833	.171351	.172761	.174059	.175260	.176369	.177389	52
51	.167764	.169365	.170853	.172223	.173491	.174659	.175735	.176728	51
50	.167262	.168831	.170276	.171615	.172847	.173979	.175028	.175988	50
49	1.166689	1.168213	1.169624	1.170924	1.172117	1.173221	1.174234	1.175163	49
48	.166027	.167513	.168883	.170142	.171305	.172371	.173350	.174256	48
47	.165275	.166718	.168045	.169271	.170394	.171423	.172378	.173246	47
46	.164422	.165819	.167110	.168294	.169377	.170381	.171296	.172138	46
45	.163458	.164816	.166063	.167203	.168260	.169221	.170108	.170916	45
	25	24	23	22	21	20	19	18	

TABLE XLVII. *93

LIFE AND TEMPORARY ANNUITIES. LOGARITHM OF THE PRESENT VALUE OF n ANNUAL PAYMENTS OF 1 AT THE BEGINNING OF EACH YEAR.

6 PER CENT.

Pay-ments n.	90	91	92	93	94	95	96	97	Pay-ments n.
	0.391855	0.363938	0.335983	0.307090	0.277673	0.246844	0.210226	0.174939	
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1
2	.213204	.205516	.197480	.188212	.178148	.167818	.151126	.139047	2
3	.304786	.290824	.276008	.259484	.242126	.222201	.196801	.174939	3
4	.349841	.330929	.310990	.289433	.266205	.241074	.210226	[10]	4
5	0.372540	0.349933	0.326562	0.301314	0.274956	0.246844	[11]		
6	.383586	.358617	.332882	.305714	.277673			1.189964	90
7	.388701	.362181	.335244	.307090	[13]	[12]	1.189102	1.189962	89
8	.390812	.363519	.335983	[14]		1.188192	.189101	.189962	88
9	.391606	.363938	[15]	1.187226		.188191	.189101	.189962	87
10	0.391855	[16]	1.185120	1.186201	.187225	.188191	.189101	.189962	86
	[17]	1.183972	1.185118	1.186200	.187225	.188191	.189101	.189962	85
84		1.183972	.185118	.186200	1.187225	1.188191	1.189101	1.189962	84
83	1.182755	.183972	.185118	.186200	.187225	.188191	.189101	.189962	83
82	.182754	.183972	.185118	.186200	.187225	.188191	.189101	.189960	82
81	.182754	.183972	.185118	.186200	.187225	.188191	.189099	.189957	81
80	.182754	.183972	.185118	.186200	.187225	.188189	.189096	.189952	80
79	1.182754	1.183972	1.185118	1.186200	1.187222	1.188186	1.189091	1.189945	79
78	.182754	.183972	.185118	.186197	.187219	.188181	.189082	.189936	78
77	.182754	.183971	.185115	.186194	.187214	.188171	.189073	.189922	77
76	.182753	.183968	.185112	.186188	.187203	.188161	.189057	.189905	76
75	.182750	.183965	.185105	.186177	.187192	.188144	.189040	.189881	75
74	1.182746	1.183958	1.185094	1.186165	1.187174	1.188126	1.189014	1.189850	74
73	.182739	.183946	.185081	.186146	.187155	.188098	.188981	.189809	73
72	.182726	.183932	.185061	.186125	.187125	.188063	.188938	.189760	72
71	.182711	.183910	.185038	.186093	.187088	.188017	.188885	.189697	71
70	.182688	.183885	.185004	.186054	.187039	.187960	.188817	.189618	70
69	1.182661	1.183849	1.184962	1.186001	1.186977	1.187887	1.188733	1.189527	69
68	.182622	.183804	.184905	.185935	.186899	.187798	.188635	.189414	68
67	.182574	.183744	.184835	.185852	.186804	.187693	.188515	.189284	67
66	.182510	.183668	.184746	.185750	.186692	.187565	.188376	.189129	66
65	.182429	.183574	.184637	.185630	.186555	.187416	.188210	.188950	65
64	1.182328	1.183457	1.184508	1.185484	1.186395	1.187239	1.188018	1.188744	64
63	.182203	.183319	.184352	.185313	.186206	.187034	.187799	.188506	63
62	.182056	.183152	.184169	.185110	.185987	.186799	.187544	.188236	62
61	.181876	.182956	.183952	.184876	.185735	.186526	.187255	.187931	61
60	.181667	.182724	.183701	.184607	.185444	.186218	.186929	.187588	60
59	1.181419	1.182455	1.183414	1.184295	1.185114	1.185869	1.186562	1.187204	59
58	.181131	.182148	.183080	.183942	.184741	.185476	.186152	.186773	58
57	.180802	.181791	.182702	.183543	.184320	.185038	.185691	.186295	57
56	.180420	.181386	.182275	.183093	.183851	.184544	.185179	.185769	56
55	.179987	.180929	.181794	.182591	.183324	.183996	.184617	.185184	55
54	1.179498	1.180414	1.181216	1.182027	1.182736	1.183395	1.183991	1.184542	54
53	.178946	.179838	.180653	.181398	.182094	.182725	.183304	.183837	53
52	.178329	.179193	.179980	.180710	.181377	.181991	.182549	.183063	52
51	.177638	.178473	.179243	.179943	.180591	.181183	.181722	.182218	51
50	.176868	.177683	.178422	.179101	.179726	.180297	.180817	.181297	50
49	1.176021	1.176804	1.177520	1.178175	1.178777	1.179328	1.179831	1.180293	49
48	.175079	.175838	.176528	.177159	.177740	.178272	.178756	.179200	48
47	.174045	.174775	.175440	.176049	.176610	.177122	.177585	.178014	47
46	.172905	.173609	.174251	.174838	.175377	.175867	.176316	.176727	46
45	.171656	.172335	.172953	.173517	.174033	.174508	.174938	.175333	45
	17	16	15	14	13	12	11	10	

TABLE XLVIII.

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO ANNUAL PREMIUM ON 1,000.
INTEREST **4** PER CENT.

Applicable to ordinary Life and Endowment Insurances, to Joint Lives and Survivorships, and all cases of the annexed Formula, where a denotes the Present Value of the Annuity. At 4 per cent. $1-v$ is .03846154. P is the Annual Premium.

$$\text{For \$1,000 Insured, } P = 1,000 \left\{ \frac{1}{1+a} - (1-v) \right\}.$$

For *a Rate of Interest* other than 4 per cent., apply the following Correction, $1,000(v-v')$ to the Tabular result:

For the rate of..	3	3½	4	4½	5	6	7	8	per cent.
Subtract........	....	....	....	4.601	9.158	18.142	26.959	35.613	
Add............	9.335	4.645	0.000	....	....	....	....	....	

EXAMPLE. Interest 5 per cent. $\lambda(1+a) = 0.136820$; the Tabular result is found to be 691.306; this, less the above Correction 9.158, leaves the Annual Premium required $682.15.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$.	0,5		1,6		2,7		3,8		4,9		1	2	3	4	5	6	7	8	9
0.00	0	961.54	1	959.24	2	956.94	3	954.65	4	952.37	23	46	69	92	115	137	160	183	206
	5	950.09	6	947.82	7	945.55	8	943.29	9	941.03	23	45	68	90	113	136	158	181	204
0.01	0	938.78	1	936.53	2	934.29	3	932.05	4	929.82	22	45	67	90	112	134	157	179	202
	5	927.59	6	925.37	7	923.15	8	920.94	9	918.73	22	44	66	88	111	133	155	177	199
0.02	0	916.53	1	914.33	2	912.14	3	909.96	4	907.78	22	44	66	88	110	131	153	175	197
	5	905.60	6	903.43	7	901.26	8	899.10	9	896.94	22	43	65	86	108	130	151	173	195
0.03	0	894.79	1	892.65	2	890.50	3	888.37	4	886.24	21	43	64	86	107	128	150	171	192
	5	884.11	6	881.99	7	879.87	8	877.76	9	875.65	21	42	63	85	106	127	148	169	190
0.04	0	873.55	1	871.45	2	869.36	3	867.27	4	865.19	21	42	63	84	105	125	146	167	188
	5	863.11	6	861.04	7	858.97	8	856.90	9	854.84	21	41	62	83	103	124	144	165	186
0.05	0	852.79	1	850.74	2	848.69	3	846.65	4	844.62	20	41	61	82	102	122	143	163	184
	5	842.59	6	840.56	7	838.54	8	836.52	9	834.51	20	40	61	81	101	121	141	161	182
0.06	0	832.50	1	830.50	2	828.50	3	826.51	4	824.52	20	40	60	80	100	120	140	160	179
	5	822.53	6	820.55	7	818.58	8	816.61	9	814.64	20	39	59	79	99	118	138	158	177
0.07	0	812.68	1	810.72	2	808.77	3	806.82	4	804.87	20	39	59	78	98	117	137	156	176
	5	802.93	6	801.00	7	799.07	8	797.14	9	795.22	19	39	58	77	96	116	135	154	173
0.08	0	793.30	1	791.39	2	789.48	3	787.58	4	785.68	19	38	57	76	95	114	133	152	171
	5	783.78	6	781.89	7	780.00	8	778.12	9	776.24	19	38	56	75	94	113	132	151	169
0.09	0	774.37	1	772.50	2	770.63	3	768.77	4	766.92	19	37	56	74	93	112	130	149	168
	5	765.06	6	763.22	7	761.37	8	759.53	9	757.70	18	37	55	74	92	110	129	147	165
0.10	0	755.87	1	754.04	2	752.22	3	750.40	4	748.58	18	36	55	73	91	109	127	146	164
	5	746.77	6	744.97	7	743.17	8	741.37	9	739.58	18	36	54	72	90	108	126	144	162
0.11	0	737.79	1	736.00	2	734.22	3	732.44	4	730.67	18	36	53	71	89	107	124	142	160
	5	728.90	6	727.14	7	725.37	8	723.62	9	721.86	18	35	53	70	88	105	123	140	158
0.12	0	720.12	1	718.37	2	716.63	3	714.89	4	713.16	17	35	52	70	87	104	122	139	156
	5	711.43	6	709.71	7	707.99	8	706.27	9	704.56	17	34	51	69	86	103	120	137	154
0.13	0	702.85	1	701.14	2	699.44	3	697.75	4	696.05	17	34	51	68	85	102	119	136	153
	5	694.36	6	692.68	7	691.00	8	689.32	9	687.64	17	34	50	67	84	101	117	134	151
0.14	0	685.97	1	684.31	2	682.65	3	680.99	4	679.33	17	33	50	66	83	99	116	133	149
	5	677.68	6	676.03	7	674.39	8	672.75	9	671.12	16	33	49	66	82	98	115	131	148
0.15	0	669.48	1	667.86	2	666.23	3	664.61	4	662.99	16	32	49	65	81	97	113	130	146
	5	661.38	6	659.77	7	658.17	8	656.56	9	654.96	16	32	48	64	80	96	112	128	144
0.16	0	653.37	1	651.78	2	650.19	3	648.61	4	647.03	16	32	48	63	79	95	111	127	143
	5	645.45	6	643.88	7	642.31	8	640.74	9	639.18	16	31	47	63	78	94	110	125	141
0.17	0	637.62	1	636.07	2	634.52	3	632.97	4	631.42	15	31	46	62	77	93	108	124	139
	5	629.88	6	628.35	7	626.81	8	625.28	9	623.76	15	31	46	61	77	92	107	122	138
	0,5		1,6		2,7		3,8		4,9		1	2	3	4	5	6	7	8	9

TABLE XLVIII. *95

CONVERSION TABLE FROM ANNUITY OR λ(1+a) TO ANNUAL PREMIUM ON 1,000.
INTEREST **4** PER CENT.

PROPORTIONAL PARTS, SUBT.

λ(1+a).	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.18	0 622.23	1 620.71	2 619.20	3 617.68	4 616.17	15	30	45	60	76	91	106	121	136
	5 614.67	6 613.17	7 611.67	8 610.17	9 608.68	15	30	45	60	75	90	105	120	135
0.19	0 607.19	1 605.71	2 604.23	3 602.75	4 601.27	15	30	44	59	74	89	103	118	133
	5 599.80	6 598.33	7 596.87	8 595.41	9 593.95	15	29	44	58	73	88	102	117	131
0.20	0 592.50	1 591.04	2 589.60	3 588.15	4 586.71	14	29	43	58	72	87	101	116	130
	5 585.27	6 583.84	7 582.41	8 580.98	9 579.55	14	29	43	57	71	86	100	114	129
0.21	0 578.13	1 576.72	2 575.30	3 573.90	4 572.48	14	28	42	56	71	85	99	113	127
	5 571.08	6 569.67	7 568.27	8 566.89	9 565.49	14	28	42	56	70	84	98	112	126
0.22	0 564.10	1 562.71	2 561.33	3 559.95	4 558.57	14	28	41	55	69	83	97	110	124
	5 557.20	6 555.83	7 554.46	8 553.10	9 551.74	14	27	41	55	68	82	95	109	123
0.23	0 550.38	1 549.03	2 547.68	3 546.33	4 544.98	13	27	40	54	67	81	94	108	121
	5 543.64	6 542.30	7 540.97	8 539.63	9 538.30	13	27	40	53	67	80	93	107	120
0.24	0 536.98	1 535.66	2 534.33	3 533.02	4 531.70	13	26	40	53	66	79	92	105	119
	5 530.39	6 529.08	7 527.78	8 526.48	9 525.18	13	26	39	52	65	78	91	104	117
0.25	0 523.89	1 522.59	2 521.30	3 520.02	4 518.72	13	26	39	52	65	77	90	103	116
	5 517.44	6 516.16	7 514.90	8 513.62	9 512.35	13	25	38	51	64	76	89	102	114
0.26	0 511.09	1 509.82	2 508.55	3 507.30	4 506.04	13	25	38	50	63	75	88	101	113
	5 504.80	6 503.54	7 502.29	8 501.05	9 499.81	12	25	37	50	62	75	87	100	112
0.27	0 498.57	1 497.34	2 496.10	3 494.87	4 493.65	12	25	37	49	62	74	86	98	111
	5 492.42	6 491.20	7 489.98	8 488.77	9 487.56	12	24	36	49	61	73	85	97	109
0.28	0 486.35	1 485.14	2 483.93	3 482.73	4 481.53	12	24	36	48	60	72	84	96	108
	5 480.34	6 479.15	7 477.95	8 476.77	9 475.58	12	24	36	48	59	71	83	95	107
0.29	0 474.40	1 473.22	2 472.04	3 470.88	4 469.70	12	23	35	47	59	70	82	94	106
	5 468.53	6 467.36	7 466.20	8 465.04	9 463.88	12	23	35	46	58	70	81	93	104
0.30	0 462.73	1 461.57	2 460.42	3 459.28	4 458.13	11	23	34	46	57	69	80	92	103
	5 456.99	6 455.85	7 454.71	8 453.58	9 452.45	11	23	34	45	57	68	79	91	102
0.31	0 451.32	1 450.19	2 449.07	3 447.95	4 446.83	11	22	34	45	56	67	79	90	101
	5 445.71	6 444.60	7 443.49	8 442.38	9 441.27	11	22	33	44	55	66	78	89	100
0.32	0 440.17	1 439.07	2 437.97	3 436.87	4 435.78	11	22	33	44	55	66	77	88	99
	5 434.69	6 433.60	7 432.52	8 431.43	9 430.35	11	22	33	43	54	65	76	87	98
0.33	0 429.27	1 428.20	2 427.12	3 426.05	4 424.99	11	21	32	43	54	64	75	86	96
	5 423.92	6 422.86	7 421.80	8 420.74	9 419.68	11	21	32	42	53	63	74	85	95
0.34	0 418.63	1 417.58	2 416.53	3 415.48	4 414.44	10	21	31	42	52	63	73	84	94
	5 413.39	6 412.36	7 411.32	8 410.28	9 409.25	10	21	31	41	52	62	72	83	93
0.35	0 408.22	1 407.19	2 406.18	3 405.15	4 404.13	10	20	31	41	51	61	71	82	92
	5 403.12	6 402.09	7 401.08	8 400.08	9 399.06	10	20	30	41	51	61	71	81	91
0.36	0 398.05	1 397.05	2 396.06	3 395.05	4 394.05	10	20	30	40	50	60	70	80	90
	5 393.06	6 392.07	7 391.07	8 390.09	9 389.10	10	20	30	40	49	59	69	79	89
0.37	0 388.12	1 387.14	2 386.16	3 385.18	4 384.21	10	20	29	39	49	59	68	78	88
	5 383.24	6 382.27	7 381.30	8 380.33	9 379.38	10	19	29	39	48	58	68	77	87
0.38	0 378.41	1 377.46	2 376.49	3 375.54	4 374.59	10	19	29	38	48	57	67	76	86
	5 373.64	6 372.69	7 371.74	8 370.81	9 369.86	9	19	28	38	47	57	66	75	85
0.39	0 368.93	1 367.98	2 367.05	3 366.11	4 365.18	9	19	28	37	47	56	65	75	84
	5 364.26	6 363.34	7 362.41	8 361.48	9 360.56	9	18	28	37	46	55	65	74	83
0.40	0 359.65	1 358.73	2 357.82	3 356.91	4 356.00	9	18	27	36	46	55	64	73	82
	5 355.10	6 354.18	7 353.28	8 352.39	9 351.48	9	18	27	36	45	54	63	72	81
0.41	0 350.58	1 349.69	2 348.80	3 347.91	4 347.02	9	18	27	36	45	53	62	71	80
	5 346.13	6 345.25	7 344.36	8 343.48	9 342.60	9	18	26	35	44	53	62	70	79
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLVIII.

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO ANNUAL PREMIUM ON 1,000.
INTEREST **4** PER CENT.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$.	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.42	0 341.73	1 340.85	2 339.98	3 339.11	4 338.24	9	17	26	35	44	52	61	70	78
	5 337.38	6 336.51	7 335.66	8 334.79	9 333.93	9	17	26	34	43	52	60	69	78
0.43	0 333.07	1 332.22	2 331.37	3 330.52	4 329.67	9	17	26	34	43	51	60	68	77
	5 328.82	6 327.98	7 327.13	8 326.29	9 325.45	8	17	25	34	42	50	59	67	76
0.44	0 324.62	1 323.78	2 322.95	3 322.12	4 321.29	8	17	25	33	42	50	58	67	75
	5 320.46	6 319.63	7 318.81	8 317.99	9 317.17	8	16	25	33	41	49	58	66	74
0.45	0 316.35	1 315.54	2 314.72	3 313.91	4 313.10	8	16	24	32	41	49	57	65	73
	5 312.29	6 311.48	7 310.68	8 309.88	9 309.07	8	16	24	32	40	48	56	64	72
0.46	0 308.28	1 307.48	2 306.68	3 305.89	4 305.10	8	16	24	32	40	48	56	64	71
	5 304.31	6 303.52	7 302.73	8 301.95	9 301.16	8	16	24	31	39	47	55	63	71
0.47	0 300.38	1 299.60	2 298.83	3 298.05	4 297.28	8	16	23	31	39	47	54	62	70
	5 296.50	6 295.73	7 294.96	8 294.20	9 293.43	8	15	23	31	38	46	54	61	69
0.48	0 292.67	1 291.91	2 291.15	3 290.39	4 289.63	8	15	23	30	38	45	53	61	68
	5 288.88	6 288.13	7 287.38	8 286.63	9 285.88	8	15	23	30	38	45	53	60	68
0.49	0 285.13	1 284.39	2 283.65	3 282.90	4 282.17	7	15	22	30	37	44	52	59	67
	5 281.43	6 280.69	7 279.96	8 279.23	9 278.50	7	15	22	29	37	44	51	59	66
0.50	0 277.77	1 277.04	2 276.31	3 275.59	4 274.87	7	14	22	29	36	43	51	58	65
	5 274.15	6 273.43	7 272.71	8 271.99	9 271.28	7	14	21	29	36	43	50	57	64
0.51	0 270.57	1 269.86	2 269.15	3 268.44	4 267.73	7	14	21	28	35	42	50	57	64
	5 267.03	6 266.33	7 265.63	8 264.93	9 264.23	7	14	21	28	35	42	49	56	63
0.52	0 263.53	1 262.84	2 262.15	3 261.45	4 260.77	7	14	21	28	35	41	48	55	62
	5 260.08	6 259.39	7 258.71	8 258.02	9 257.34	7	14	21	27	34	41	48	55	62
0.53	0 256.66	1 255.98	2 255.30	3 254.63	4 253.95	7	14	20	27	34	41	47	54	61
	5 253.28	6 252.61	7 251.94	8 251.27	9 250.61	7	13	20	27	33	40	47	53	60
0.54	0 249.94	1 249.28	2 248.62	3 247.96	4 247.30	7	13	20	26	33	40	46	53	59
	5 246.64	6 245.98	7 245.33	8 244.68	9 244.03	7	13	20	26	33	39	46	52	59
0.55	0 243.38	1 242.73	2 242.08	3 241.44	4 240.79	6	13	19	26	32	39	45	52	58
	5 240.15	6 239.51	7 238.87	8 238.23	9 237.60	6	13	19	26	32	38	45	51	57
0.56	0 236.96	1 236.33	2 235.70	3 235.07	4 234.44	6	13	19	25	32	38	44	50	57
	5 233.81	6 233.18	7 232.56	8 231.93	9 231.31	6	12	19	25	31	37	44	50	56
0.57	0 230.69	1 230.07	2 229.46	3 228.84	4 228.22	6	12	18	25	31	37	43	49	55
	5 227.61	6 227.00	7 226.39	8 225.78	9 225.17	6	12	18	24	30	36	43	49	55
0.58	0 224.57	1 223.96	2 223.36	3 222.75	4 222.15	6	12	18	24	30	36	42	48	54
	5 221.55	6 220.96	7 220.36	8 219.76	9 219.17	6	12	18	24	30	36	42	48	53
0.59	0 218.58	1 217.99	2 217.40	3 216.81	4 216.22	6	12	18	24	29	35	41	47	53
	5 215.64	6 215.05	7 214.47	8 213.89	9 213.31	6	12	17	23	29	35	41	47	52
0.60	0 212.73	1 212.15	2 211.57	3 211.00	4 210.42	6	12	17	23	29	35	40	46	52
	5 209.85	6 209.28	7 208.71	8 208.14	9 207.58	6	11	17	23	28	34	40	45	51
0.61	0 207.01	1 206.44	2 205.88	3 205.32	4 204.76	6	11	17	22	28	34	39	45	51
	5 204.20	6 203.64	7 203.08	8 202.53	9 201.97	6	11	17	22	28	33	39	44	50
0.62	0 201.42	1 200.87	2 200.32	3 199.77	4 199.22	5	11	16	22	27	33	38	44	49
	5 198.68	6 198.13	7 197.59	8 197.04	9 196.50	5	11	16	22	27	33	38	44	49
0.63	0 195.96	1 195.42	2 194.88	3 194.35	4 193.81	5	11	16	21	27	32	38	43	48
	5 193.28	6 192.75	7 192.21	8 191.68	9 191.15	5	11	16	21	27	32	37	42	48
0.64	0 190.63	1 190.10	2 189.57	3 189.05	4 188.53	5	11	16	21	26	32	37	42	47
	5 188.00	6 187.48	7 186.96	8 186.44	9 185.93	5	10	16	21	26	31	36	41	47
0.65	0 185.41	1 184.90	2 184.38	3 183.87	4 183.36	5	10	15	20	26	31	36	41	46
	5 182.85	6 182.34	7 181.83	8 181.32	9 180.82	5	10	15	20	25	30	36	41	46
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLVIII. *97

CONVERSION TABLE FROM ANNUITY OR λ(1+a) TO ANNUAL PREMIUM ON 1,000.
INTEREST 4 PER CENT.

PROPORTIONAL PARTS, SUBT.

λ(1+a).	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.66	0 180.31	1 179.81	2 179.31	3 178.81	4 178.31	5	10	15	20	25	30	35	40	45
	5 177.81	6 177.31	7 176.82	8 176.32	9 175.83	5	10	15	20	25	30	35	40	45
0.67	0 175.33	1 174.84	2 174.35	3 173.86	4 173.37	5	10	15	20	24	29	34	39	44
	5 172.89	6 172.40	7 171.92	8 171.43	9 170.95	5	10	15	19	24	29	34	39	44
0.68	0 170.47	1 169.99	2 169.51	3 169.03	4 168.55	5	10	14	19	24	29	33	38	43
	5 168.08	6 167.60	7 167.13	8 166.65	9 166.18	5	9	14	19	24	28	33	38	43
0.69	0 165.71	1 165.24	2 164.77	3 164.31	4 163.84	5	9	14	19	23	28	33	37	42
	5 163.38	6 162.91	7 162.45	8 161.99	9 161.52	5	9	14	19	23	28	32	37	42
0.70	0 161.06	1 160.61	2 160.15	3 159.69	4 159.24	5	9	14	18	23	27	32	36	41
	5 158.78	6 158.33	7 157.87	8 157.42	9 156.97	5	9	14	18	23	27	32	36	41
0.71	0 156.52	1 156.07	2 155.63	3 155.18	4 154.74	4	9	13	18	22	27	31	36	40
	5 154.29	6 153.85	7 153.41	8 152.96	9 152.52	4	9	13	18	22	27	31	35	40
0.72	0 152.08	1 151.65	2 151.21	3 150.77	4 150.34	4	9	13	17	22	26	31	35	39
	5 149.90	6 149.47	7 149.04	8 148.61	9 148.18	4	9	13	17	22	26	30	34	39
0.73	0 147.75	1 147.32	2 146.89	3 146.47	4 146.04	4	9	13	17	21	26	30	34	38
	5 145.62	6 145.19	7 144.77	8 144.35	9 143.93	4	8	13	17	21	25	30	34	38
0.74	0 143.51	1 143.09	2 142.67	3 142.26	4 141.84	4	8	12	17	21	25	29	33	37
	5 141.43	6 141.01	7 140.60	8 140.19	9 139.78	4	8	12	16	21	25	29	33	37
0.75	0 139.37	1 138.96	2 138.55	3 138.14	4 137.74	4	8	12	16	20	24	29	33	37
	5 137.33	6 136.93	7 136.52	8 136.12	9 135.72	4	8	12	16	20	24	28	32	36
0.76	0 135.32	1 134.92	2 134.52	3 134.12	4 133.73	4	8	12	16	20	24	28	32	36
	5 133.33	6 132.93	7 132.54	8 132.15	9 131.75	4	8	12	16	20	24	28	32	35
0.77	0 131.36	1 130.97	2 130.58	3 130.19	4 129.81	4	8	12	16	19	23	27	31	35
	5 129.42	6 129.03	7 128.65	8 128.26	9 127.88	4	8	12	15	19	23	27	31	35
0.78	0 127.50	1 127.12	2 126.73	3 126.35	4 125.98	4	8	11	15	19	23	27	30	34
	5 125.60	6 125.22	7 124.84	8 124.47	9 124.09	4	8	11	15	19	23	26	30	34
0.79	0 123.72	1 123.35	2 122.97	3 122.60	4 122.23	4	7	11	15	19	22	26	30	33
	5 121.86	6 121.49	7 121.13	8 120.76	9 120.39	4	7	11	15	18	22	26	29	33
0.80	0 120.03	1 119.66	2 119.30	3 118.94	4 118.57	4	7	11	15	18	22	25	29	33
	5 118.21	6 117.85	7 117.49	8 117.14	9 116.78	4	7	11	14	18	21	25	29	32
0.81	0 116.42	1 116.06	2 115.71	3 115.35	4 115.00	4	7	11	14	18	21	25	28	32
	5 114.65	6 114.30	7 113.94	8 113.59	9 113.24	4	7	11	14	18	21	25	28	32
0.82	0 112.89	1 112.55	2 112.20	3 111.85	4 111.51	3	7	10	14	17	21	24	28	31
	5 111.16	6 110.82	7 110.47	8 110.13	9 109.79	3	7	10	14	17	21	24	27	31
0.83	0 109.45	1 109.11	2 108.77	3 108.43	4 108.09	3	7	10	14	17	20	24	27	30
	5 107.76	6 107.42	7 107.08	8 106.75	9 106.42	3	7	10	13	17	20	24	27	30
0.84	0 106.08	1 105.75	2 105.42	3 105.08	4 104.76	3	7	10	13	17	20	23	26	30
	5 104.43	6 104.10	7 103.77	8 103.44	9 103.12	3	7	10	13	16	20	23	26	30
0.85	0 102.79	1 102.47	2 102.14	3 101.82	4 101.50	3	6	10	13	16	19	23	26	29
	5 101.18	6 100.85	7 100.53	8 100.21	9 99.80	3	6	10	13	16	19	22	26	29
0.86	0 99.58	1 99.26	2 98.94	3 98.63	4 98.31	3	6	9	13	16	19	22	25	28
	5 98.00	6 97.68	7 97.37	8 97.06	9 96.75	3	6	9	13	16	19	22	25	28
0.87	0 96.43	1 96.12	2 95.82	3 95.51	4 95.20	3	6	9	12	15	18	22	25	28
	5 94.89	6 94.58	7 94.28	8 93.97	9 93.67	3	6	9	12	15	18	21	24	28
0.88	0 93.36	1 93.06	2 92.76	3 92.46	4 92.16	3	6	9	12	15	18	21	24	27
	5 91.86	6 91.56	7 91.26	8 90.96	9 90.66	3	6	9	12	15	18	21	24	27
0.89	0 90.36	1 90.07	2 89.77	3 89.48	4 89.18	3	6	9	12	15	18	21	24	26
	5 88.89	6 88.60	7 88.30	8 88.01	9 87.72	3	6	9	12	15	18	20	23	26
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLVIII.

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO ANNUAL PREMIUM ON 1,000. INTEREST 4 PER CENT.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.90	87.43	87.14	86.85	86.56	86.28	85.99	85.70	85.42	85.13	84.85	3	6	9	11	14	17	20	23	26
0.91	84.57	84.28	84.00	83.72	83.44	83.16	82.88	82.60	82.32	82.04	3	6	8	11	14	17	20	22	25
0.92	81.77	81.49	81.21	80.94	80.66	80.39	80.12	79.84	79.57	79.30	3	5	8	11	14	16	19	22	25
0.93	79.03	78.76	78.49	78.22	77.95	77.68	77.42	77.15	76.88	76.62	3	5	8	11	13	16	19	21	24
0.94	76.35	76.09	75.83	75.56	75.30	75.04	74.78	74.52	74.26	74.00	3	5	8	10	13	16	18	21	23
0.95	73.74	73.48	73.22	72.97	72.71	72.46	72.20	71.95	71.69	71.44	3	5	8	10	13	15	18	20	23
0.96	71.18	70.93	70.68	70.43	70.18	69.93	69.68	69.43	69.19	68.84	2	5	7	10	12	15	17	20	22
0.97	68.69	68.44	68.20	67.95	67.71	67.46	67.22	66.98	66.73	66.49	2	5	7	10	12	15	17	20	22
0.98	66.25	66.01	65.77	65.53	65.29	65.05	64.81	64.58	64.34	64.10	2	5	7	10	12	14	17	19	21
0.99	63.87	63.63	63.40	63.16	62.93	62.69	62.46	62.23	62.00	61.77	2	5	7	9	12	14	16	19	21
1.00	61.54	61.31	61.08	60.85	60.62	60.39	60.17	59.94	59.71	59.49	2	5	7	9	11	14	16	18	21
1.01	59.26	59.04	58.81	58.59	58.37	58.14	57.92	57.70	57.48	57.25	2	4	7	9	11	13	16	18	20
1.02	57.04	56.82	56.60	56.38	56.16	55.95	55.73	55.51	55.30	55.08	2	4	7	9	11	13	15	17	20
1.03	54.86	54.65	54.44	54.22	54.01	53.80	53.58	53.37	53.16	52.95	2	4	6	8	11	13	15	17	19
1.04	52.74	52.53	52.32	52.11	51.90	51.70	51.49	51.28	51.08	50.87	2	4	6	8	10	12	15	17	19
1.05	50.66	50.46	50.25	50.05	49.85	49.64	49.44	49.24	49.04	48.84	2	4	6	8	10	12	14	16	18
1.06	48.64	48.44	48.24	48.04	47.84	47.64	47.44	47.24	47.05	46.85	2	4	6	8	10	12	14	16	18
1.07	46.65	46.46	46.26	46.07	45.87	45.68	45.49	45.29	45.10	44.91	2	4	6	8	10	12	14	15	17
1.08	44.72	44.52	44.33	44.14	43.95	43.76	43.57	43.39	43.20	43.01	2	4	6	8	10	11	13	15	17
1.09	42.82	42.64	42.45	42.26	42.08	41.89	41.71	41.52	41.34	41.15	2	4	6	7	9	11	13	15	17
1.10	40.97	40.79	40.61	40.43	40.24	40.06	39.88	39.70	39.52	39.34	2	4	5	7	9	11	13	14	16
1.11	39.16	38.99	38.81	38.63	38.45	38.28	38.10	37.92	37.75	37.57	2	4	5	7	9	11	12	14	16
1.12	37.40	37.22	37.05	36.87	36.70	36.53	36.36	36.18	36.01	35.84	2	3	5	7	9	10	12	14	16
1.13	35.67	35.50	35.33	35.16	34.99	34.82	34.65	34.48	34.32	34.15	2	3	5	7	8	10	12	14	15
1.14	33.98	33.82	33.65	33.48	33.32	33.15	32.99	32.82	32.66	32.50	2	3	5	7	8	10	12	13	15
1.15	32.33	32.17	32.01	31.85	31.68	31.52	31.36	31.20	31.04	30.88	2	3	5	6	8	10	11	13	14
1.16	30.72	30.56	30.40	30.25	30.09	29.93	29.77	29.62	29.46	29.30	2	3	5	6	8	9	11	13	14
1.17	29.15	28.99	28.84	28.68	28.53	28.37	28.22	28.07	27.91	27.76	2	3	5	6	8	9	11	12	14
1.18	27.61	27.46	27.30	27.15	27.00	26.85	26.70	26.55	26.40	26.25	2	3	5	6	8	9	11	12	14
1.19	26.10	25.96	25.81	25.66	25.51	25.37	25.22	25.07	24.93	24.78	1	3	4	6	7	9	10	12	13
1.20	24.63	24.49	24.34	24.20	24.06	23.91	23.77	23.63	23.48	23.34	1	3	4	6	7	9	10	11	13
1.21	23.20	23.06	22.91	22.77	22.63	22.49	22.35	22.21	22.07	21.93	1	3	4	6	7	8	10	11	13
1.22	21.79	21.66	21.52	21.38	21.24	21.10	20.97	20.83	20.69	20.56	1	3	4	5	7	8	10	11	12
1.23	20.42	20.29	20.15	20.02	19.88	19.75	19.61	19.48	19.35	19.22	1	3	4	5	7	8	9	11	12
1.24	19.08	18.95	18.82	18.69	18.55	18.42	18.29	18.16	18.03	17.90	1	3	4	5	7	8	9	10	12
1.25	17.77	17.64	17.51	17.39	17.26	17.13	17.00	16.87	16.75	16.62	1	3	4	5	6	8	9	10	12
1.26	16.49	16.37	16.24	16.11	15.99	15.86	15.74	15.61	15.49	15.37	1	3	4	5	6	8	9	10	11
1.27	15.24	15.12	14.99	14.87	14.75	14.63	14.50	14.38	14.26	14.14	1	2	4	5	6	7	9	10	11
1.28	14.02	13.90	13.78	13.66	13.54	13.42	13.30	13.18	13.06	12.94	1	2	4	5	6	7	8	10	11
1.29	12.82	12.71	12.59	12.47	12.35	12.24	12.12	12.00	11.89	11.77	1	2	3	5	6	7	8	9	10
1.30	11.66	11.54	11.43	11.31	11.20	11.08	10.97	10.86	10.74	10.63	1	2	3	5	6	7	8	9	10
1.31	10.52	10.40	10.29	10.18	10.07	9.96	9.84	9.73	9.62	9.51	1	2	3	4	6	7	8	9	10
1.32	9.40	9.29	9.18	9.07	8.96	8.85	8.74	8.64	8.53	8.42	1	2	3	4	5	7	8	9	10
1.33	8.31	8.20	8.10	7.99	7.88	7.78	7.67	7.56	7.46	7.35	1	2	3	4	5	6	7	8	10
1.34	7.25	7.14	7.04	6.93	6.83	6.72	6.62	6.52	6.41	6.31	1	2	3	4	5	6	7	8	9
1.35	6.21	6.10	6.00	5.90	5.80	5.70	5.59	5.49	5.39	5.29	1	2	3	4	5	6	7	8	9
1.36	5.19	5.09	4.99	4.89	4.79	4.69	4.59	4.49	4.39	4.29	1	2	3	4	5	6	7	8	9
1.37	4.20	4.10	4.00	3.90	3.81	3.71	3.61	3.51	3.42	3.32	1	2	3	4	5	6	7	8	9
1.38	3.23	3.13	3.03	2.94	2.84	2.75	2.65	2.56	2.46	2.37	1	2	3	4	5	6	7	8	9
1.39	2.28	2.18	2.09	2.00	1.90	1.81	1.72	1.63	1.53	1.44	1	2	3	4	5	6	7	7	8
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9

TABLE XLIX. *99

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO SINGLE PREMIUM ON 1,000.
INTEREST 4 PER CENT.

Applicable to ordinary Life and Endowment Insurance, to Joint Lives and Survivorships, and all cases under the annexed Formula:

$$\text{For } \$1,000 \text{ Insured, A} = 1,000 \left\{ 1 - (1-v)(1+a) \right\}.$$

For other Rates of Interest : Before entering the Table, correct $\lambda(1+a)$ by $\lambda(1-v') - \lambda(1-v)$, thus:

For the rate of.	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7	8	per cent.
Subtract.......	0.120743	.055899	.000000	......	......	......	......	......	
Add..........	......	......	......	.049070	.092754	.167819	.230688	.284640	

EXAMPLE. Interest 3 per cent. $\lambda(1+a) = 0.368943$. Subtracting 0.120743. leaves 0.248200. With this, the Table gives the required Single Premium 931.89.

$\lambda(1+a)$.	0	1	2	3	4	5	6	7	8	9	*Ref.
0.00	961.54	961.45	961.36	961.27	961.18	961.09	961.00	960.91	960.82	960.73	1.39
0.01	960.64	960.55	960.46	960.37	960.28	960.19	960.09	960.00	959.91	959.82	1.39
0.02	959.73	959.63	959.54	959.45	959.35	959.26	959.17	959.07	958.98	958.88	1.38
0.03	958.79	958.69	958.60	958.50	958.41	958.31	958.21	958.12	958.02	957.92	1.37
0.04	957.83	957.73	957.63	957.54	957.44	957.34	957.24	957.14	957.04	556.94	1.36
0.05	956.85	956.75	956.65	956.55	956.45	956.35	956.25	956.14	956.04	955.94	1.35
0.06	955.84	955.74	955.64	955.53	955.43	955.33	955.23	955.12	955.02	954.92	1.34
0.07	954.81	954.71	954.60	954.50	954.39	954.29	954.18	954.08	953.97	953.87	1.33
0.08	953.76	953.65	953.55	953.44	953.33	953.22	953.12	953.01	952.90	952.79	1.32
0.09	952.68	952.57	952.46	952.35	952.24	952.13	952.02	951.91	951.80	951.69	1.31
0.10	951.58	951.47	951.36	951.24	951.13	951.02	950.91	950.79	950.68	950.57	1.30
0.11	950.45	950.34	950.22	950.11	949.99	949.88	949.76	949.65	949.53	949.41	1.29
0.12	949.30	949.18	949.06	948.95	948.83	948.71	948.59	948.47	948.36	948.24	1.28
0.13	948.12	948.00	947.88	947.76	947.64	947.52	947.39	947.27	947.15	947.03	1.27
0.14	946.91	946.79	946.66	946.54	946.42	946.29	946.17	946.05	945.92	945.80	1.26
0.15	945.67	945.55	945.42	945.29	945.17	945.04	944.92	944.79	944.66	944.53	1.25
0.16	944.41	944.28	944.15	944.02	943.89	943.76	943.63	943.50	943.37	943.24	1.24
0.17	943.11	942.98	942.85	942.72	942.58	942.45	942.32	942.19	942.05	941.92	1.23
0.18	941.79	941.65	941.52	941.38	941.25	941.11	940.98	940.84	940.70	840.57	1.22
0.19	940.43	940.29	940.16	940.02	939.88	939.74	939.60	939.46	939.32	939.18	1.21
0.20	939.04	938.90	938.76	938.62	938.48	938.34	938.19	938.05	937.91	937.77	1.20
0.21	937.62	937.48	937.33	937.19	937.05	936.90	936.75	936.61	936.46	936.32	1.19
0.22	936.17	936.02	935.88	935.73	935.58	935.43	935.28	935.13	934.98	934.83	1.18
0.23	934.68	934.53	934.38	934.23	934.08	933.93	933.77	933.62	933.47	933.32	1.17
0.24	933.16	933.01	932.85	932.70	932.54	932.39	932.23	932.08	931.92	931.76	1.16
0.25	931.60	931.45	931.29	931.13	930.97	930.81	930.65	930.49	930.33	930.17	1.15
0.26	930.01	929.85	929.69	929.53	929.36	929.20	929.04	928.87	928.71	928.55	1.14
0.27	928.38	928.22	928.05	927.88	927.72	927.55	927.38	927.22	927.05	926.88	1.13
0.28	926.71	926.54	926.37	926.21	926.03	925.86	925.69	925.52	925.35	925.18	1.12
0.29	925.01	924.83	924.66	924.49	924.31	924.14	923.96	923.79	923.61	923.44	1.11
0.30	923.26	923.08	922.90	922.73	922.55	922.37	922.19	922.01	921.83	921.65	1.10
0.31	921.47	921.29	921.11	920.93	920.74	920.56	920.38	920.20	920.01	919.83	1.09
0.32	919.64	919.46	919.27	919.09	918.90	918.71	918.52	918.34	918.15	917.96	1.08
0.33	917.77	917.58	917.39	917.20	917.01	916.82	916.63	916.43	916.24	916.05	1.07
0 34	915.86	915.66	915.47	915.27	915.08	914.88	914.68	914.49	914.29	914.09	1.06
0.35	913.90	913.70	913.50	913.30	913.10	912.90	912.70	912.50	912.29	912.09	1.05
0.36	911.89	911.69	911.48	911.28	911.07	910.87	910.66	910.46	910.25	910.04	1.04
0.37	909.84	909.63	909.42	909.21	909.00	908.79	908.58	908.37	908.16	907.95	1.03
0.38	907.74	907.52	907.31	907.10	906.88	906.67	906.45	906.24	906.02	905.81	1.02
0.39	905.59	905.37	905.15	904.93	904.71	904.49	904.27	904.05	903.83	903.61	1.01
0.40	903.39	903.17	902.94	902.72	902.50	902.27	902.04	901.82	901.59	901.37	1.00
0.41	901.14	900.91	900.68	900.45	900.22	899.99	899.76	899.53	899.30	899.07	1.00
0.42	898.84	898.60	898.37	898.13	897.90	897.66	897.43	897.19	896.96	896.72	0.99
	0	1	2	3	4	5	6	7	8	9	

* REF. This refers to PROPORTIONAL PARTS, common to both, on the preceding Page.

TABLE XLIX.

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO SINGLE PREMIUM ON 1,000.
INTEREST **4** PER CENT.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.43	0 896.48	1 896.24	2 896.00	3 895.76	4 895.52	2	5	7	10	12	14	17	19	22
	5 895.28	6 895.04	7 894.80	8 894.55	9 894.31	2	5	7	10	12	15	17	19	22
0.44	0 894.07	1 893.82	2 893.58	3 893.33	4 893.09	2	5	7	10	12	15	17	20	22
	5 892.84	6 892.59	7 892.35	8 892.10	9 891.85	2	5	7	10	12	15	17	20	22
0.45	0 891.60	1 891.35	2 891.10	3 890.85	4 890.60	3	5	8	10	13	15	18	20	23
	5 890.35	6 890.09	7 889.84	8 889.59	9 889.33	3	5	8	10	13	15	18	20	23
0.46	0 889.08	1 888.82	2 888.56	3 888.31	4 888.05	3	5	8	10	13	15	18	21	23
	5 887.79	6 887.53	7 887.27	8 887.01	9 886.75	3	5	8	10	13	16	18	21	23
0.47	0 886.49	1 886.23	2 885.97	3 885.71	4 885.44	3	5	8	10	13	16	18	21	24
	5 885.18	6 884.91	7 884.65	8 884.38	9 884.12	3	5	8	11	13	16	19	21	24
0.48	0 883.85	1 883.58	2 883.31	3 883.04	4 882.77	3	5	8	11	14	16	19	22	24
	5 882.50	6 882.23	7 881.96	8 881.69	9 881.42	3	5	8	11	14	16	19	22	24
0.49	0 881.14	1 880.87	2 880.59	3 880.32	4 880.04	3	5	8	11	14	16	19	22	25
	5 879.77	6 879.49	7 879.21	8 878.93	9 878.65	3	6	8	11	14	17	20	22	25
0.50	0 878.37	1 878.09	2 877.81	3 877.53	4 877.25	3	6	8	11	14	17	20	22	25
	5 876.97	6 876.68	7 876.40	8 876.11	9 875.83	3	6	9	11	14	17	20	23	26
0.51	0 875.54	1 875.25	2 874.97	3 874.68	4 874.39	3	6	9	12	14	17	20	23	26
	5 874.10	6 873.81	7 873.52	8 873.23	9 872.93	3	6	9	12	15	18	20	23	26
0.52	0 872.64	1 872.35	2 872.05	3 871.76	4 871.46	3	6	9	12	15	18	21	24	26
	5 871.17	6 870.87	7 870.57	8 870.27	9 869.98	3	6	9	12	15	18	21	24	27
0.53	0 869.68	1 869.37	2 869.07	3 868.77	4 868.47	3	6	9	12	15	18	21	24	27
	5 868.17	6 867.86	7 867.56	8 867.25	9 866.95	3	6	9	12	15	18	21	24	28
0.54	0 866.64	1 866.33	2 866.02	3 865.72	4 865.41	3	6	9	12	15	18	22	25	28
	5 865.10	6 864.78	7 864.47	8 864.16	9 863.85	3	6	9	13	16	19	22	25	28
0.55	0 863.53	1 863.22	2 862.90	3 862.59	4 862.27	3	6	9	13	16	19	22	25	28
	5 861.95	6 861.63	7 861.32	8 861.00	9 860.68	3	6	10	13	16	19	22	26	29
0.56	0 860.35	1 860.03	2 859.71	3 859.39	4 859.06	3	6	10	13	16	19	23	26	29
	5 858.74	6 858.41	7 858.09	8 857.76	9 857.43	3	7	10	13	16	20	23	26	30
0.57	0 857.10	1 856.77	2 856.44	3 856.11	4 855.78	3	7	10	13	17	20	23	26	30
	5 855.45	6 855.11	7 854.78	8 854.45	9 854.11	3	7	10	13	17	20	24	27	30
0.58	0 853.77	1 853.44	2 853.10	3 852.76	4 852.42	3	7	10	14	17	20	24	27	30
	5 852.08	6 851.74	7 851.40	8 851.05	9 850.71	3	7	10	14	17	21	24	27	31
0.59	0 850.37	1 850.03	2 849.68	3 849.33	4 848.98	3	7	10	14	17	21	24	28	31
	5 848.63	6 848.29	7 847.94	8 847.59	9 847.23	4	7	11	14	18	21	25	28	32
0.60	0 846.88	1 846.53	2 846.18	3 845.82	4 845.47	4	7	11	14	18	21	25	28	32
	5 845.11	6 844.75	7 844.39	8 844.04	9 843.68	4	7	11	14	18	21	25	29	32
0.61	0 843.32	1 842.95	2 842.59	3 842.23	4 841.87	4	7	11	15	18	22	25	29	33
	5 841.50	6 841.14	7 840.77	8 840.40	9 840.03	4	7	11	15	18	22	26	29	33
0.62	0 839.67	1 839.30	2 838.93	3 838.55	4 838.18	4	7	11	15	19	22	26	30	33
	5 837.81	6 837.44	7 837.06	8 836.68	9 836.31	4	8	11	15	19	23	26	30	34
0.63	0 835.93	1 835.55	2 835.17	3 834.79	4 834.41	4	8	11	15	19	23	27	30	34
	5 834.03	6 833.65	7 833.27	8 832.88	9 832.50	4	8	12	15	19	23	27	31	35
0.64	0 832.11	1 831.72	2 831.33	3 830.95	4 830.56	4	8	12	16	19	23	27	31	35
	5 830.17	6 829.77	7 829.38	8 828.99	9 828.59	4	8	12	16	20	24	28	32	35
0.65	0 828.20	1 827.80	2 827.41	3 827.01	4 826.61	4	8	12	16	20	24	28	32	36
	5 826.21	6 825.81	7 825.41	8 825.00	9 824.60	4	8	12	16	20	24	28	32	36
0.66	0 824.20	1 823.79	2 823.39	3 822.98	4 822.57	4	8	12	16	20	24	29	33	37
	5 822.16	6 821.75	7 821.34	8 820.93	9 820.52	4	8	12	16	21	25	29	33	37
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLIX. *101

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO SINGLE PREMIUM ON 1,000.
INTEREST **4** PER CENT.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$.	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.67	0 820.10	1 819.69	2 819.27	3 818.85	4 818.44	4	8	12	17	21	25	29	33	37
	5 818.02	6 817.60	7 817.18	8 816.76	9 816.33	4	8	13	17	21	25	30	34	38
0.68	0 815.91	1 815.49	2 815.06	3 814.64	4 814.21	4	9	13	17	21	26	30	34	38
	5 813.78	6 813.35	7 812.92	8 812.49	9 812.06	4	9	13	17	22	26	30	35	39
0.69	0 811.62	1 811.19	2 810.75	3 810.32	4 809.88	4	9	13	17	22	26	31	35	39
	5 809.44	6 809.00	7 808.56	8 808.12	9 807.68	4	9	13	18	22	26	31	35	40
0.70	0 807.24	1 806.79	2 806.35	3 805.90	4 805.45	4	9	13	18	22	27	31	36	40
	5 805.00	6 804.55	7 804.10	8 803.65	9 803.20	5	9	14	18	23	27	32	36	41
0.71	0 802.75	1 802.29	2 801.84	3 801.38	4 800.92	5	9	14	18	23	27	32	37	41
	5 800.46	6 800.00	7 799.54	8 799.08	9 798.62	5	9	14	18	23	28	32	37	42
0.72	0 798.15	1 797.69	2 797.22	3 796.75	4 796.28	5	9	14	19	23	28	33	37	42
	5 795.81	6 795.34	7 794.87	8 794.40	9 793.92	5	9	14	19	24	28	33	38	42
0.73	0 793.45	1 792.97	2 792.50	3 792.02	4 791.54	5	10	14	19	24	29	33	38	43
	5 791.06	6 790.58	7 790.09	8 789.61	9 789.12	5	10	15	19	24	29	34	39	44
0.74	0 788.64	1 788.15	2 787.66	3 787.17	4 786.68	5	10	15	20	25	29	34	39	44
	5 786.19	6 785.70	7 785.20	8 784.71	9 784.21	5	10	15	20	25	30	35	40	45
0.75	0 783.71	1 783.22	2 782.72	3 782.22	4 781.71	5	10	15	20	25	30	35	40	45
	5 781.21	6 780.71	7 780.20	8 779.69	9 779.19	5	10	15	20	25	30	35	40	46
0.76	0 778.68	1 778.17	2 777.66	3 777.14	4 776.63	5	10	15	21	26	31	36	41	46
	5 776.11	6 775.60	7 775.08	8 774.56	9 774.04	5	10	16	21	26	31	36	41	47
0.77	0 773.52	1 773.00	2 772.48	3 771.95	4 771.43	5	10	16	21	26	31	37	42	47
	5 770.90	6 770.37	7 769.84	8 769.31	9 768.78	5	11	16	21	27	32	37	42	48
0.78	0 768.25	1 767.71	2 767.18	3 766.64	4 766.10	5	11	16	22	27	32	38	43	48
	5 765.56	6 765.02	7 764.48	8 763.94	9 763.39	5	11	16	22	27	33	38	43	49
0.79	0 762.85	1 762.30	2 761.75	3 761.20	4 760.65	6	11	17	22	28	33	39	44	50
	5 760.10	6 759.55	7 758.99	8 758.44	9 757.88	6	11	17	22	28	33	39	44	50
0.80	0 757.32	1 756.76	2 756.20	3 755.64	4 755.08	6	11	17	22	28	34	39	45	51
	5 754.51	6 753.95	7 753.38	8 752.81	9 752.24	6	11	17	23	28	34	40	45	51
0.81	0 751.67	1 751.10	2 750.53	3 749.95	4 749.37	6	11	17	23	29	34	40	46	52
	5 748.80	6 748.22	7 747.64	8 747.05	9 746.47	6	12	17	23	29	35	41	47	52
0.82	0 745.89	1 745.30	2 744.71	3 744.13	4 743.54	6	12	18	24	30	35	41	47	53
	5 742.94	6 742.35	7 741.76	8 741.16	9 740.57	6	12	18	24	30	36	42	48	53
0.83	0 739.97	1 739.37	2 738.77	3 738.17	4 737.56	6	12	18	24	30	36	42	48	54
	5 736.96	6 736.35	7 735.74	8 735.13	9 734.52	6	12	18	24	31	37	43	49	55
0.84	0 733.91	1 733.30	2 732.68	3 732.07	4 731.45	6	12	18	25	31	37	43	49	55
	5 730.83	6 730.21	7 729.59	8 728.96	9 728.34	6	12	19	25	31	37	44	50	56
0.85	0 727.71	1 727.09	2 726.46	3 725.83	4 725.19	6	13	19	25	32	38	44	50	57
	5 724.56	6 723.93	7 723.29	8 722.65	9 722.01	6	13	19	26	32	38	45	51	57
0.86	0 721.37	1 720.73	2 720.08	3 719.44	4 718.79	6	13	19	26	32	39	45	52	58
	5 718.14	6 717.49	7 716.84	8 716.19	9 715.54	7	13	20	26	33	39	46	52	59
0.87	0 714.88	1 714.22	2 713.56	3 712.90	4 712.24	7	13	20	26	33	40	46	53	59
	5 711.58	6 710.91	7 710.25	8 709.58	9 708.91	7	13	20	27	33	40	47	53	60
0.88	0 708.24	1 707.57	2 706.89	3 706.22	4 705.54	7	14	20	27	34	41	47	54	61
	5 704.86	6 704.18	7 703.50	8 702.82	9 702.13	7	14	21	27	34	41	48	55	62
0.89	0 701.44	1 700.76	2 700.07	3 699.37	4 698.68	7	14	21	28	35	41	48	55	62
	5 697.99	6 697.29	7 696.59	8 695.89	9 695.19	7	14	21	28	35	42	49	56	63
0.90	0 694.49	1 693.78	2 693.08	3 692.37	4 691.66	7	14	21	28	35	42	50	57	64
	5 690.95	6 690.24	7 689.52	8 688.81	9 688.09	7	14	21	29	36	43	50	57	64
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLIX.

CONVERSION TABLE FROM ANNUITY OR $\lambda(1+a)$ TO SINGLE PREMIUM ON 1,000

INTEREST **4** PER CENT.

PROPORTIONAL PARTS, SUBT.

$\lambda(1+a)$	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
0.91	0 687.37	1 686.65	2 685.93	3 685.21	4 684.48	7	14	22	29	36	43	51	58	65
	5 683.75	6 683.02	7 682.29	8 681.56	9 680.83	7	15	22	29	37	44	51	59	66
0.92	0 680.09	1 679.35	2 678.61	3 677.87	4 677.13	7	15	22	30	37	44	52	59	67
	5 676.39	6 675.64	7 674.89	8 674.14	9 673.39	8	15	23	30	38	45	53	60	68
0.93	0 672.64	1 671.88	2 671.13	3 670.37	4 669.61	8	15	23	30	38	45	53	61	68
	5 668.85	6 668.09	7 667.32	8 666.55	9 665.78	8	15	23	31	38	46	54	61	69
0.94	0 665.01	1 664.24	2 663.47	3 662.69	4 661.91	8	16	23	31	39	47	54	62	70
	5 661.13	6 660.35	7 659.57	8 658.79	9 658.00	8	16	24	31	39	47	55	63	71
0.95	0 657.21	1 656.42	2 655.63	3 654.83	4 654.04	8	16	24	32	40	48	56	64	71
	5 653.24	6 652.44	7 651.64	8 650.84	9 650.03	8	16	24	32	40	48	56	64	72
0.96	0 649.23	1 648.42	2 647.61	3 646.80	4 645.98	8	16	24	33	41	49	57	65	73
	5 645.16	6 644.35	7 643.53	8 642.71	9 641.88	8	16	25	33	41	49	57	66	74
0.97	0 641.06	1 640.23	2 639.40	3 638.57	4 637.73	8	17	25	33	42	50	58	67	75
	5 636.90	6 636.06	7 635.22	8 634.38	9 633.54	8	17	25	34	42	50	59	67	76
0.98	0 632.70	1 631.85	2 631.00	3 630.15	4 629.30	9	17	26	34	43	51	60	68	77
	5 628.44	6 627.59	7 626.73	8 625.87	9 625.00	9	17	26	34	43	52	60	69	77
0.99	0 624.14	1 623.27	2 622.40	3 621.53	4 620.66	9	17	26	35	44	52	61	70	78
	5 619.79	6 618.91	7 618.03	8 617.15	9 616.27	9	18	26	35	44	53	62	71	79
1.00	0 615.38	1 614.50	2 613.61	3 612.72	4 611.83	9	18	27	36	45	53	62	71	80
	5 610.93	6 610.03	7 609.14	8 608.23	9 607.33	9	18	27	36	45	54	63	72	81
1.01	0 606.43	1 605.52	2 604.61	3 603.70	4 602.78	9	18	27	36	46	55	64	73	82
	5 601.87	6 600.95	7 600.03	8 599.11	9 598.18	9	18	28	37	46	55	65	74	83
1.02	0 597.26	1 596.33	2 595.40	3 594.47	4 593.53	9	19	28	37	47	56	65	75	84
	5 592.59	6 591.66	7 590.71	8 589.77	9 588.82	9	19	28	38	47	57	66	75	85
1.03	0 587.88	1 586.93	2 585.97	3 585.02	4 584.06	10	19	29	38	48	57	67	76	86
	5 583.10	6 582.14	7 581.18	8 580.22	9 579.25	10	19	29	39	48	58	67	77	87
1.04	0 578.28	1 577.31	2 576.33	3 575.35	4 574.38	10	20	29	39	49	59	68	78	88
	5 573.39	6 572.41	7 571.43	8 570.44	9 569.45	10	20	30	40	49	59	69	79	89
1.05	0 568.45	1 567.46	2 566.46	3 565.46	4 564.46	10	20	30	40	50	60	70	80	90
	5 563.46	6 562.45	7 561.44	8 560.43	9 559.42	10	20	30	40	51	61	71	81	91
1.06	0 558.40	1 557.38	2 556.36	3 555.34	4 554.32	10	20	31	41	51	61	72	82	92
	5 553.29	6 552.26	7 551.23	8 550.19	9 549.16	10	21	31	41	52	62	72	83	93
1.07	0 548.12	1 547.07	2 546.03	3 544.98	4 543.94	10	21	31	42	52	63	73	84	94
	5 542.88	6 541.83	7 540.77	8 539.72	9 538.65	11	21	32	42	53	63	74	85	95
1.08	0 537.59	1 536.52	2 535.46	3 534.39	4 533.31	11	21	32	43	54	64	75	86	96
	5 532.24	6 531.16	7 530.08	8 528.99	9 527.91	11	22	33	43	54	65	76	87	98
1.09	0 526.82	1 525.73	2 524.64	3 523.54	4 522.44	11	22	33	44	55	66	77	88	99
	5 521.34	6 520.24	7 519.13	8 518.02	9 516.91	11	22	33	44	55	66	78	89	100
1.10	0 515.80	1 514.68	2 513.56	3 512.44	4 511.32	11	22	34	45	56	67	79	90	101
	5 510.19	6 509.06	7 507.93	8 506.80	9 505.66	11	23	34	45	57	68	79	91	102
1.11	0 504.52	1 503.38	2 502.23	3 501.08	4 499.93	11	23	34	46	57	69	80	92	103
	5 498.78	6 497.63	7 496.47	8 495.31	9 494.14	12	23	35	46	58	70	81	93	104
1.12	0 492.98	1 491.81	2 490.64	3 489.46	4 488.29	12	23	35	47	59	70	82	94	106
	5 487.11	6 485.92	7 484.74	8 483.55	9 482.36	12	24	36	48	59	71	83	95	107
1.13	0 481.17	1 479.97	2 478.77	3 477.57	4 476.37	12	24	36	48	60	72	84	96	108
	5 475.16	6 473.95	7 472.74	8 471.52	9 470.30	12	24	36	49	61	73	85	97	109
1.14	0 469.08	1 467.86	2 466.63	3 465.40	4 464.17	12	25	37	49	61	74	86	98	111
	5 462.94	6 461.70	7 460.46	8 459.21	9 457.97	12	25	37	50	62	75	87	100	112
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE XLIX.

*103

CONVERSION TABLE FROM ANNUITY OR λ(1+a) TO SINGLE PREMIUM ON 1,000.
INTEREST 4 PER CENT.

PROPORTIONAL PARTS, SUBT.

λ(1+a).	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9
1.15	0 456.72	1 455.46	2 454.21	3 452.95	4 451.69	13	25	38	50	63	75	88	101	113
	5 450.43	6 449.16	7 447.89	8 446.62	9 445.34	13	25	38	51	64	76	89	102	115
1.16	0 444.06	1 442.78	2 441.50	3 440.21	4 438.92	13	26	39	52	64	77	90	103	116
	5 437.62	6 436.33	7 435.03	8 433.73	9 432.42	13	26	39	52	65	78	91	104	117
1.17	0 431.11	1 429.80	2 428.49	3 427.17	4 425.85	13	26	40	53	66	79	92	105	119
	5 424.52	6 423.20	7 421.87	8 420.54	9 419.20	13	27	40	53	67	80	93	107	120
1.18	0 417.86	1 416.52	2 415.17	3 413.83	4 412.47	13	27	40	54	67	81	94	108	121
	5 411.12	6 409.76	7 408.40	8 407.04	9 405.67	14	27	41	55	68	82	95	109	123
1.19	0 404.30	1 402.93	2 401.55	3 400.17	4 398.79	14	28	41	55	69	83	97	110	124
	5 397.40	6 396.01	7 394.62	8 393.23	9 391.83	14	28	42	56	70	84	98	112	125
1.20	0 390.43	1 389.02	2 387.61	3 386.20	4 384.79	14	28	42	56	71	85	99	113	127
	5 383.37	6 381.95	7 380.52	8 379.09	9 377.66	14	29	43	57	71	86	100	114	129
1.21	0 376.23	1 374.79	2 373.35	3 371.90	4 370.45	14	29	43	58	72	87	101	116	130
	5 369.00	6 367.55	7 366.09	8 364.63	9 363.16	15	29	44	58	73	88	102	117	131
1.22	0 361.70	1 360.23	2 358.75	3 357.27	4 355.79	15	30	44	59	74	89	103	118	133
	5 354.31	6 352.82	7 351.33	8 349.83	9 348.33	15	30	45	60	75	90	105	120	135
1.23	0 346.83	1 345.32	2 343.81	3 342.30	4 340.79	15	30	45	60	76	91	106	121	136
	5 339.27	6 337.74	7 336.22	8 334.69	9 333.15	15	31	46	61	77	92	107	123	138
1.24	0 331.61	1 330.07	2 328.53	3 326.98	4 325.43	15	31	46	62	77	93	108	124	139
	5 323.87	6 322.32	7 320.75	8 319.19	9 317.62	16	31	47	63	78	94	109	125	141
1.25	0 316.05	1 314.47	2 312.89	3 311.30	4 309.72	16	32	48	63	79	95	111	127	143
	5 308.13	6 306.53	7 304.93	8 303.33	9 301.72	16	32	48	64	80	96	112	128	144
1.26	0 300.11	1 298.50	2 296.88	3 295.26	4 293.64	16	32	49	65	81	97	113	130	146
	5 292.01	6 290.38	7 288.74	8 287.10	9 285.46	16	33	49	66	82	98	115	131	148
1.27	0 283.81	1 282.16	2 280.51	3 278.85	4 277.19	17	33	50	66	83	99	116	133	149
	5 275.52	6 273.85	7 272.17	8 270.50	9 268.82	17	34	50	67	84	101	117	134	151
1.28	0 267.13	1 265.44	2 263.75	3 262.05	4 260.35	17	34	51	68	85	102	119	136	153
	5 258.64	6 256.93	7 255.22	8 253.50	9 251.78	17	34	51	69	86	103	120	137	154
1.29	0 250.06	1 248.33	2 246.60	3 244.86	4 243.12	17	35	52	69	87	104	122	139	156
	5 241.38	6 239.63	7 237.87	8 236.12	9 234.36	18	35	53	70	88	105	123	141	158
1.30	0 232.59	1 230.82	2 229.05	3 227.27	4 225.49	18	36	53	71	89	107	124	142	160
	5 223.71	6 221.92	7 220.12	8 218.32	9 216.52	18	36	54	72	90	108	126	144	162
1.31	0 214.72	1 212.91	2 211.09	3 209.27	4 207.45	18	36	55	73	91	109	127	146	164
	5 205.62	6 203.79	7 201.96	8 200.12	9 198.27	18	37	55	74	92	110	129	147	166
1.32	0 196.42	1 194.57	2 192.71	3 190.85	4 188.99	19	37	56	74	93	112	130	149	167
	5 187.12	6 185.25	7 183.37	8 181.48	9 179.60	19	38	56	75	94	113	132	151	169
1.33	0 177.71	1 175.81	2 173.91	3 172.01	4 170.10	19	38	57	76	95	114	133	152	172
	5 168.18	6 166.27	7 164.35	8 162.42	9 160.49	19	39	58	77	96	116	135	154	173
1.34	0 158.55	1 156.61	2 154.67	3 152.72	4 150.77	19	39	58	78	97	117	136	156	175
	5 148.81	6 146.85	7 144.88	8 142.91	9 140.93	20	39	59	79	99	118	138	158	177
1.35	0 138.95	1 136.97	2 134.98	3 132.98	4 130.99	20	40	60	80	100	120	140	160	179
	5 128.98	6 126.97	7 124.96	8 122.94	9 120.92	20	40	60	81	101	121	141	161	181
1.36	0 118.90	1 116.87	2 114.83	3 112.79	4 110.74	20	41	61	82	102	123	143	163	184
	5 108.69	6 106.64	7 104.58	8 102.52	9 100.45	21	41	62	83	103	124	144	165	186
1.37	0 98.37	1 96.29	2 94.21	3 92.12	4 90.03	21	42	63	84	104	125	146	167	188
	5 87.93	6 85.83	7 83.72	8 81.61	9 79.49	21	42	63	85	106	127	148	169	190
1.38	0 77.37	1 75.24	2 73.11	3 70.98	4 68.83	21	43	64	85	107	128	150	171	192
	5 66.69	6 64.54	7 62.38	8 60.22	9 58.05	22	43	65	86	108	130	151	173	195
	0,5	1,6	2,7	3,8	4,9	1	2	3	4	5	6	7	8	9

TABLE L.

SINGLE PREMIUM OR RESERVE BY MONTHS, ON PAID-UP INSURANCE OF 1,000
FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	0m.	$\frac{1}{2}$m. * Dec.	$1\frac{1}{2}$m. Nov.	$2\frac{1}{2}$m. Oct.	$3\frac{1}{2}$m. Sept.	$4\frac{1}{2}$m. Aug.	$5\frac{1}{2}$m. July.	AGE. $x+n$.
10	202.630	202.753	203.000	203.246	203.493	203.739	203.986	10
11	205.587	205.716	205.972	206.228	206.485	206.741	206.997	11
12	208.665	208.799	209.067	209.334	209.602	209.869	210.137	12
13	211.878	212.017	212.296	212.575	212.854	213.133	213.412	13
14	215.224	215.369	215.658	215.948	216.238	216.528	216.817	14
15	218.699	218.850	219.152	219.454	219.755	220.057	220.359	15
16	222.321	222.478	222.793	223.107	223.422	223.736	224.051	16
17	226.095	226.258	226.586	226.913	227.239	227.566	227.894	17
18	230.019	230.189	230.529	230.869	231.210	231.550	231.890	18
19	234.101	234.278	234.632	234.986	235.340	235.694	236.048	19
20	238.349	238.533	238.901	239.269	239.636	240.004	240.372	20
21	242.763	242.954	243.336	243.718	244.100	244.482	244.864	21
22	247.348	247.547	247.944	248.341	248.739	249.136	249.533	22
23	252.116	252.322	252.735	253.147	253.560	253.972	254.385	23
24	257.065	257.279	257.707	258.135	258.564	258.992	259.420	24
25	262.203	262.425	262.870	263.315	263.759	264.204	264.649	25
26	267.540	267.771	268.231	268.692	269.153	269.614	270.074	26
27	273.069	273.308	273.786	274.264	274.742	275.220	275.698	27
28	278.806	279.054	279.550	280.046	280.541	281.037	281.533	28
29	284.756	285.012	285.525	286.038	286.551	287.064	287.577	29
30	290.909	291.175	291.706	292.237	292.768	293.299	293.830	30
31	297.284	297.559	298.109	298.659	299.210	299.760	300.310	31
32	303.886	304.171	304.739	305.308	305.878	306.447	307.015	32
33	310.714	311.008	311.596	312.185	312.772	313.361	313.949	33
34	317.773	318.077	318.685	319.292	319.901	320.508	321.116	34
35	325.066	325.379	326.006	326.633	327.260	327.887	328.514	35
36	332.588	332.912	333.559	334.207	334.854	335.502	336.149	36
37	340.359	340.693	341.361	342.029	342.696	343.364	344.032	37
38	348.373	348.717	349.405	350.093	350.782	351.470	352.158	38
39	356.630	356.984	357.693	358.402	359.110	359.819	360.528	39
40	365.134	365.498	366.227	366.956	367.684	368.413	369.142	40
41	373.879	374.254	375.004	375.754	376.504	377.254	378.004	41
42	382.879	383.264	384.034	384.804	385.574	386.344	387.114	42
43	392.119	392.514	393.305	394.096	394.887	395.678	396.469	43
44	401.608	402.013	402.824	403.635	404.446	405.257	406.068	44
45	411.338	411.753	412.584	413.415	414.246	415.077	415.908	45
46	421.309	421.734	422.585	423.435	424.287	425.137	425.988	46
47	431.516	431.951	432.821	433.690	434.560	435.429	436.299	47
48	441.953	442.397	443.286	444.175	445.064	445.953	446.842	48
49	452.618	453.071	453.978	454.885	455.792	456.699	457.606	49
50	463.500	463.962	464.887	465.811	466.736	467.660	468.585	50
51	474.594	475.065	476.006	476.947	477.888	478.829	479.770	51
52	485.889	486.368	487.325	488.282	489.240	490.197	491.154	52
53	497.376	497.862	498.835	499.807	500.780	501.752	502.725	53
54	509.046	509.539	510.526	511.514	512.500	513.488	514.475	54

* Months of Entry for Annual Valuation Dec. 31.

TABLE L.

SINGLE PREMIUM OR RESERVE BY MONTHS, ON PAID-UP INSURANCE OF 1,000 FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	6m.	6½m. June.	7½m. May.	8¼m. April.	9½m. March.	10¼m. Feb.	11½m. Jan.	AGE. $x+n$.
10	204.109	204.232	204.479	204.725	204.971	205.217	205.464	10
11	207.126	207.255	207.511	207.767	208.024	208.280	208.536	11
12	210.271	210.405	210.673	210.940	211.209	211.476	211.744	12
13	213.551	213.690	213.969	214.248	214.527	214.806	215.085	13
14	216.962	217.107	217.396	217.686	217.975	218.265	218.554	14
15	220.510	220.661	220.963	221.265	221.566	221.868	222.170	15
16	224.208	224.365	224.680	224.994	225.309	225.623	225.938	16
17	228.057	228.220	228.548	228.875	229.201	229.528	229.856	17
18	232.060	232.230	232.570	232.910	233.251	233.591	233.931	18
19	236.225	236.402	236.756	237.110	237.464	237.818	238.172	19
20	240.556	240.740	241.108	241.476	241.843	242.211	242.579	20
21	245.055	245.246	245.628	246.010	246.393	246.775	247.157	21
22	249.732	249.931	250.328	250.725	251.123	251.520	251.917	22
23	254.591	254.797	255.210	255.622	256.034	256.446	256.859	23
24	259.634	259.848	260.276	260.704	261.133	261.561	261.989	24
25	264.871	265.093	265.538	265.983	266.428	266.873	267.318	25
26	270.305	270.536	270.996	271.457	271.917	272.378	272.838	26
27	275.937	276.176	276.654	277.132	277.611	278.089	278.567	27
28	281.781	282.029	282.525	283.021	283.516	284.012	284.508	28
29	287.833	288.089	288.602	289.115	289.627	290.140	290.653	29
30	294.096	294.362	294.893	295.424	295.956	296.487	297.018	30
31	300.585	300.860	301.410	301.960	302.511	303.061	303.611	31
32	307.300	307.585	308.153	308.722	309.292	309.861	310.429	32
33	314.243	314.537	315.125	315.714	316.302	316.891	317.479	33
34	321.420	321.724	322.332	322.939	323.547	324.154	324.762	34
35	328.827	329.140	329.767	330.394	331.021	331.648	332.275	35
36	336.473	336.797	337.444	338.092	338.740	339.388	340.035	36
37	344.366	344.700	345.368	346.036	346.703	347.371	348.039	37
38	352.502	352.846	353.534	354.222	354.910	355.598	356.286	38
39	360.882	361.236	361.945	362.654	363.362	364.071	364.780	39
40	369.506	369.870	370.599	371.328	372.057	372.786	373.515	40
41	378.379	378.754	379.504	380.254	381.004	381.754	382.504	41
42	387.499	387.884	388.654	389.424	390.194	390.964	391.734	42
43	396.864	397.259	398.050	398.841	399.631	400.422	401.213	43
44	406.473	406.878	407.689	408.500	409.311	410.122	410.933	44
45	416.323	416.738	417.569	418.400	419.232	420.063	420.894	45
46	426.413	426.838	427.689	428.539	429.390	430.240	431.091	46
47	436.734	437.169	438.039	438.908	439.779	440.648	441.518	47
48	447.286	447.730	448.619	449.508	450.396	451.285	452.174	48
49	458.059	458.512	459.419	460.326	461.233	462.140	.463.047	49
50	469.047	469.509	470.434	471.358	472.283	473.207	474.132	50
51	480.241	480.712	481.653	482.594	483.536	484.477	485.418	51
52	491.633	492.112	493.069	494.026	494.983	495.940	496.897	52
53	503.211	503.697	504.670	505.642	506.615	507.587	508.560	53
54	514.968	515.461	516.448	517.436	518.422	519.410	520.397	54

TABLE L.

SINGLE PREMIUM OR RESERVE BY MONTHS, ON PAID-UP INSURANCE OF 1,000
FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	0m.	½m. * Dec.	1½m. Nov.	2½m. Oct.	3½m. Sept.	4½m. Aug.	5½m. July.	AGE. $x+n$.
55	520.890	521.390	522.389	523.388	524.388	525.387	526.386	55
56	532.882	533.388	534.399	535.411	536.421	537.433	538.444	56
57	545.019	545.530	546.551	547.573	548.594	549.616	550.637	57
58	557.277	557.792	558.823	559.853	560.884	561.914	562.945	58
59	569.642	570.161	571.200	572.238	573.276	574.314	575.353	59
60	582.103	582.625	583.670	584.714	585.759	586.803	587.848	60
61	594.636	595.160	596.208	597.256	598.305	599.353	600.401	61
62	607.214	607.740	608.791	609.842	610.893	611.944	612.995	62
63	619.829	620.355	621.408	622.460	623.513	624.565	625.618	63
64	632.458	632.983	634.034	635.085	636.136	637.187	638.238	64
65	645.069	645.593	646.641	647.689	648.736	649.784	650.832	65
66	657.643	658.165	659.208	660.251	661.295	662.338	663.381	66
67	670.162	670.680	671.716	672.753	673.789	674.826	675.862	67
68	682.598	683.112	684.141	685.169	686.198	687.226	688.255	68
69	694.941	695.450	696.467	697.484	698.502	699.519	700.536	69
70	707.148	707.651	708.656	709.661	710.666	711.671	712.676	70
71	719.211	719.706	720.697	721.688	722.678	723.669	724.660	71
72	731.099	731.586	732.561	733.536	734.510	735.485	736.460	72
73	742.795	743.274	744.232	745.189	746.148	747.105	748.063	73
74	754.288	754.757	755.694	756.631	757.568	758.505	759.442	74
75	765.535	765.994	766.910	767.828	768.744	769.662	770.578	75
76	776.539	776.987	777.882	778.778	779.673	780.569	781.464	76
77	787.285	787.721	788.592	789.464	790.335	791.207	792.078	77
78	797.743	798.167	799.014	799.862	800.710	801.558	802.405	78
79	807.914	808.325	809.148	809.970	810.792	811.614	812.437	79
80	817.783	818.181	818.978	819.775	820.573	821.370	822.167	80
81	827.346	827.732	828.505	829.277	830.049	830.821	831.594	81
82	836.614	836.987	837.733	838.480	839.225	839.972	840.718	82
83	845.569	845.931	846.655	847.379	848.103	848.827	849.551	83
84	854.256	854.607	855.309	856.010	856.712	857.413	858.115	84
85	862.677	863.019	863.704	864.389	865.073	865.758	866.443	85
86	870.893	871.231	871.908	872.584	873.262	873.938	874.615	86
87	879.012	879.349	880.022	880.695	881.367	882.040	882.713	87
88	887.089	887.437	888.132	888.827	889.523	890.218	890.913	88
89	895.433	895.740	896.354	896.969	897.583	898.198	898.812	89
90	902.805	903.066	903.589	904.111	904.635	905.157	905.680	90
91	909.076	909.321	909.811	910.301	910.792	911.282	911.772	91
92	914.958	915.194	915.665	916.137	916.608	917.080	917.551	92
93	920.617	920.841	921.288	921.735	922.183	922.630	923.077	93
94	925.985	926.203	926.639	927.075	927.512	927.948	928.384	94
95	931.219	931.457	931.934	932.410	932.887	933.363	933.840	95
96	936.936	937.147	937.570	937.992	938.414	938.836	939.259	96
97	942.005	942.305	942.906	943.506	944.108	944.708	945.309	97
98	949.212	949.726	950.753	951.780	952.806	953.833	954.860	98
99	961.537	963.140	966.345	969.550	972.756	975.961	979.166	99

* Months of Entry for Annual Valuation Dec. 31.

TABLE L.

SINGLE PREMIUM OR RESERVE BY MONTHS, ON PAID-UP INSURANCE OF 1,000 FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	6m.	6½m. June.	7½m. May.	8½m. April.	9½m. March.	10½m. Feb.	11½m. Jan.	AGE. $x+n$.
55	526.886	527.386	528.385	529.384	530.384	531.383	532.382	55
56	538.950	539.456	540.467	541.479	542.490	543.502	544.513	56
57	551.148	551.659	552.680	553.702	554.723	555.745	556.766	57
58	563.460	563.975	565.006	566.036	567.066	568.096	569.127	58
59	575.872	576.391	577.430	578.468	579.507	580.545	581.584	59
60	588.370	588.892	589.937	590.981	592.025	593.069	594.114	60
61	600.925	601.449	602.497	603.545	604.594	605.642	606.690	61
62	613.521	614.047	615.098	616.149	617.201	618.252	619.303	62
63	626.144	626.670	627.723	628.775	629.827	630.879	631.932	63
64	638.763	639.288	640.339	641.390	642.442	643.493	644.544	64
65	651.356	651.880	652.928	653.976	655.023	656.071	657.119	65
66	663.903	664.425	665.468	666.511	667.554	668.597	669.640	66
67	676.380	676.898	677.934	678.971	680.007	681.044	682.080	67
68	688.769	689.283	690.312	691.340	692.370	693.398	694.427	68
69	701.045	701.554	702.571	703.588	704.605	705.622	706.639	69
70	713.179	713.682	714.687	715.692	716.698	717.703	718.708	70
71	725.155	725.650	726.641	727.632	728.622	729.613	730.604	71
72	736.947	737.434	738.409	739.384	740.358	741.333	742.308	72
73	748.542	749.021	749.979	750.936	751.894	752.851	753.809	73
74	759.911	760.380	761.317	762.254	763.192	764.129	765.066	74
75	771.037	771.496	772.412	773.330	774.246	775.164	776.080	75
76	781.912	782.360	783.255	784.151	785.046	785.942	786.837	76
77	792.514	792.950	793.821	794.693	795.564	796.436	797.307	77
78	802.829	803.253	804.100	804.948	805.795	806.643	807.490	78
79	812.848	813.259	814.082	814.904	815.727	816.549	817.372	79
80	822.565	822.963	823.760	824.557	825.354	826.151	826.948	80
81	831.980	832.366	833.139	833.911	834.683	835.455	836.228	81
82	841.091	841.464	842.210	842.957	843.703	844.450	845.196	82
83	849.913	850.275	850.999	851.723	852.446	853.170	853.894	83
84	858.466	858.817	859.519	860.220	860.923	861.624	862.326	84
85	866.785	867.127	867.812	868.497	869.181	869.866	870.551	85
86	874.953	875.291	875.968	876.644	877.321	877.997	878.674	86
87	883.050	883.387	884.060	884.733	885.406	886.079	886.752	87
88	891.261	891.609	892.304	892.999	893.695	894.390	895.085	88
89	899.119	899.426	900.040	900.655	901.269	901.884	902.498	89
90	905.941	906.202	906.725	907.247	907.770	908.292	908.815	90
91	912.017	912.262	912.752	913.242	913.733	914.223	914.713	91
92	917.787	918.023	918.494	918.966	919.438	919.910	920.381	92
93	923.301	923.525	923.972	924.419	924.867	925.314	925.761	93
94	928.602	928.820	929.256	929.692	930.129	930.565	931.001	94
95	934.078	934.316	934.793	935.269	935.745	936.221	936.698	95
96	939.470	939.681	940.104	940.526	940.949	941.371	941.794	96
97	945.609	945.909	946.510	947.110	947.711	948.311	948.912	97
98	955.374	955.888	956.915	957.942	958.969	959.996	961.023	98
99	980.769	982.372	985.577	988.782	991.987	995.192	998.397	99

TABLE LI.

LOGARITHM OF THE SINGLE PREMIUM BY MONTHS, ON 1 INSURED FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	0m.	$\frac{1}{2}$m. *Dec.	$1\frac{1}{2}$m. Nov.	$2\frac{1}{2}$m. Oct.	$3\frac{1}{2}$m. Sept.	$4\frac{1}{2}$m. Aug.	$5\frac{1}{2}$m. July.	AGE. $x+n$.
10	$\bar{1}$.306703	$\bar{1}$.306967	$\bar{1}$.307496	$\bar{1}$.308022	$\bar{1}$.308549	$\bar{1}$.309074	$\bar{1}$.309601	10
11	.312996	.313267	.313808	.314348	.314889	.315427	.315964	11
12	.319450	.319728	.320286	.320839	.321395	.321948	.322503	12
13	.326086	.326371	.326942	.327512	.328082	.328651	.329219	13
14	.332890	.333183	.333766	.334349	.334932	.335514	.336093	14
15	$\bar{1}$.339847	$\bar{1}$.340147	$\bar{1}$.340745	$\bar{1}$.341344	$\bar{1}$.341939	$\bar{1}$.342535	$\bar{1}$.343131	15
16	.346980	.347287	.347902	.348513	.349126	.349736	.350347	16
17	.354290	.354604	.355233	.355860	.356483	.357107	.357733	17
18	.361763	.362084	.362725	.363366	.364007	.364645	.365282	18
19	.369403	.369731	.370388	.371042	.371696	.372349	.373000	19
20	$\bar{1}$.377213	$\bar{1}$.377548	$\bar{1}$.378218	$\bar{1}$.378886	$\bar{1}$.379552	$\bar{1}$.380218	$\bar{1}$.380884	20
21	.385182	.385524	.386207	.386887	.387568	.388247	.388925	21
22	.393309	.393658	.394354	.395049	.395744	.396436	.397128	22
23	.401601	.401955	.402666	.403373	.404081	.404786	.405492	23
24	.410042	.410404	.411126	.411847	.412568	.413286	.414003	24
25	$\bar{1}$.418637	$\bar{1}$.419005	$\bar{1}$.419741	$\bar{1}$.420476	$\bar{1}$.421207	$\bar{1}$.421939	$\bar{1}$.422670	25
26	.427389	.427764	.428509	.429255	.429999	.430742	.431482	26
27	.436272	.436653	.437412	.438168	.438925	.439680	.440434	27
28	.445303	.445688	.446459	.447230	.447997	.448764	.449530	28
29	.454473	.454863	.455645	.456424	.457202	.457979	.458754	29
30	$\bar{1}$.463757	$\bar{1}$.464155	$\bar{1}$.464945	$\bar{1}$.465736	$\bar{1}$.466524	$\bar{1}$.467311	$\bar{1}$.468096	30
31	.473172	.473573	.474376	.475176	.475976	.476774	.477570	31
32	.482711	.483118	.483928	.484738	.485548	.486356	.487160	32
33	.492361	.492771	.493592	.494412	.495228	.496045	.496859	33
34	.502117	.502532	.503362	.504188	.505015	.505839	.506662	34
35	$\bar{1}$.511971	$\bar{1}$.512390	1.513226	$\bar{1}$.514060	1.514893	$\bar{1}$.515724	$\bar{1}$.516554	35
36	.521906	.522330	.523173	.524015	.524855	.525695	.526532	36
37	.531937	.532363	.533214	.534063	.534909	.535755	.536599	37
38	.542045	.542473	.543329	.544184	.545037	.545888	.546738	38
39	.552218	.552649	.553511	.554370	.555227	.556084	.556939	39
40	$\bar{1}$.562452	$\bar{1}$.562885	1.563750	1.564614	1.565475	$\bar{1}$.566335	1.567193	40
41	.572731	.573166	.574036	.574904	.575770	.576634	.577496	41
42	.583062	.583498	.584369	.585239	.586107	.586974	.587839	42
43	.593418	.593855	.594730	.595602	.596473	.597342	.598209	43
44	.603802	.604240	.605115	.605989	.606861	.607731	.608599	44
45	$\bar{1}$.614199	$\bar{1}$.614637	1.615512	$\bar{1}$.616386	$\bar{1}$.617259	$\bar{1}$.618129	$\bar{1}$.618997	45
46	.624601	.625038	.625914	.626787	.627660	.628529	.629397	46
47	.634997	.635434	.636308	.637179	.638050	.638917	.639784	47
48	.645376	.645812	.646684	.647554	.648423	.649289	.650154	48
49	.655732	.656166	.657035	.657901	.658767	.659630	.660492	49
50	$\bar{1}$.666050	$\bar{1}$.666483	$\bar{1}$.667347	$\bar{1}$.668210	1.669071	$\bar{1}$.669930	$\bar{1}$.670789	50
51	.676322	.676753	.677612	.678470	.679326	.680180	.681033	51
52	.686537	.686965	.687819	.688671	.689522	.690370	.691218	52
53	.696685	.697109	.697957	.698802	.699647	.700489	.701331	53
54	.706757	.707177	.708018	.708858	.709694	.710530	.711364	54

* Months of Entry for Annual Valuation Dec. 31.

TABLE LI.

LOGARITHM OF THE SINGLE PREMIUM BY MONTHS, ON 1 INSURED FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$.	6m.	6½m. June.	7½m. May.	8½m. April.	9½m. March.	10½m. Feb.	11½m. Jan.	AGE. $x+n$.
10	1̄.309862	1̄.310124	1̄.310649	1̄.311171	1̄.311692	1̄.312214	1̄.312735	10
11	.316235	.316505	.317041	.317577	.318113	.318648	.319181	11
12	.322779	.323056	.323609	.324159	.324712	.325261	.325811	12
13	.329502	.329784	.330351	.330917	.331482	.332046	.332610	13
14	.336384	.336674	.337252	.337830	.338407	.338984	.339559	14
15	1̄.343428	1̄.343726	1̄.344320	1̄.344913	1̄.345503	1̄.346095	1̄.346685	15
16	.350651	.350955	.351564	.352171	.352778	.353384	.353989	16
17	.358043	.358354	.358977	.359599	.360217	.360835	.361456	17
18	.365600	.365918	.366544	.367188	.367824	.368456	.369088	18
19	.373326	.373651	.374301	.374950	.375598	.376244	.376891	19
20	1̄.381216	1̄.381548	1̄.382211	1̄.382874	1̄.383533	1̄.384194	1̄.384853	20
21	.389264	.389602	.390278	.390953	.391628	.392301	.392973	21
22	.397474	.397820	.398510	.399198	.399886	.400573	.401258	22
23	.405843	.406194	.406898	.407598	.408298	.408996	.409694	23
24	.414362	.414720	.415434	.416148	.416862	.417573	.418283	24
25	1̄.423035	1̄.423398	1̄.424127	1̄.424854	1̄.425580	1̄.426305	1̄.427028	25
26	.431854	.432225	.432963	.433701	.434436	.435172	.435905	26
27	.440810	.441186	.441937	.442687	.443437	.444184	.444930	27
28	.449912	.450294	.451057	.451819	.452578	.453337	.454095	28
29	.459141	.459527	.460299	.461071	.461840	.462608	.463375	29
30	1̄.468489	1̄.468882	1̄.469665	1̄.470446	1̄.471227	1̄.472006	1̄.472783	30
31	.477967	.478364	.479158	.479949	.480741	.481530	.482317	31
32	.487563	.487965	.488766	.489568	.490369	.491167	.491963	32
33	.497265	.497672	.498483	.499294	.500102	.500910	.501715	33
34	.507073	.507484	.508304	.509121	.509937	.510751	.511566	34
35	1̄.516967	1̄.517381	1̄.518207	1̄.519032	1̄.519855	1̄.520677	1̄.521498	35
36	.526950	.527368	.528202	.529035	.529866	.530696	.531524	36
37	.537020	.537441	.538282	.539121	.539958	.540793	.541628	37
38	.547161	.547585	.548431	.549275	.550118	.550960	.551799	38
39	.557365	.557791	.558643	.559493	.560339	.561186	.562031	39
40	1̄.567621	1̄.568049	1̄.568904	1̄.569758	1̄.570609	1̄.571460	1̄.572308	40
41	.577927	.578357	.579216	.580074	.580929	.581783	.582636	41
42	.588271	.588702	.589563	.590422	.591280	.592136	.592991	42
43	.598641	.599074	.599938	.600800	.601659	.602518	.603375	43
44	.609031	.609464	.610329	.611192	.612053	.612913	.613771	44
45	1̄.619430	1̄.619863	1̄.620728	1̄.621592	1̄.622454	1̄.623314	1̄.624173	45
46	.629830	.630263	.631128	.631990	.632852	.633711	.634569	46
47	.640217	.640649	.641513	.642373	.643234	.644092	.644948	47
48	.650585	.651016	.651878	.652737	.653594	.654451	.655306	48
49	.660921	.661351	.662209	.663065	.663921	.664774	.665625	49
50	1̄.671216	1̄.671644	1̄.672499	1̄.673351	1̄.674203	1̄.675051	1̄.675899	50
51	.681459	.681885	.682735	.683582	.684428	.685273	.686116	51
52	.691641	.692064	.692908	.693750	.694590	.695429	.696266	52
53	.701750	.702169	.703007	.703843	.704678	.705511	.706342	53
54	.711780	.712196	.713026	.713857	.714684	.715510	.716335	54

TABLE LI.

LOGARITHM OF THE SINGLE PREMIUM BY MONTHS, ON 1 INSURED FOR THE WHOLE LIFE.

4 PER CENT.

AGE. x+n.	0m.	½m. * Dec.	1½m. Nov.	2½m. Oct.	3½m. Sept.	4½m. Aug.	5½m. July.	AGE. x+n.
55	Ī.716746	Ī.717163	Ī.717994	Ī.718823	Ī.719652	Ī.720480	Ī.721304	55
56	.726631	.727043	.727865	.728687	.729506	.730324	.731140	56
57	.736412	.736819	.737631	.738442	.739251	.740060	.740866	57
58	.746071	.746473	.747274	.748074	.748873	.749670	.750466	58
59	.755602	.755998	.756788	.757577	.758364	.759149	.759934	59
60	Ī.765000	Ī.765389	1.766167	Ī.766944	Ī.767719	1.768492	1.769265	60
61	.774251	.774634	.775398	.776160	.776923	.777683	.778442	61
62	.783342	.783718	.784469	.785217	.785965	.786712	.787457	62
63	.792272	.792641	.793377	.794111	.794845	.795578	.796310	63
64	.801032	.801392	.802113	.802832	.803550	.804267	.804983	64
65	Ī.809606	1.809959	Ī.810664	Ī.811366	Ī.812068	1.812769	1.813469	65
66	.817990	.818335	.819023	.819709	.820396	.821080	.821763	66
67	.826180	.826515	.827186	.827856	.828524	.829192	.829858	67
68	.834165	.834492	.835146	.835797	.836450	.837100	.837750	68
69	.841948	.842266	.842900	.843534	.844167	.844799	.845431	69
70	Ī.849510	Ī.849820	Ī.850436	1.851051	Ī.851666	Ī.852280	Ī.852892	70
71	.856856	.857156	.857753	.858359	.858945	.859540	.860134	71
72	.863976	.864266	.864844	.865422	.865998	.866574	.867149	72
73	.870869	.871149	.871708	.872266	.872825	.873382	.873938	73
74	.877537	.877807	.878346	.878885	.879422	.879959	.880494	74
75	Ī.883965	Ī.884225	Ī.884744	Ī.885264	Ī.885781	1.886300	1.886817	75
76	.890163	.890414	.890914	.891414	.891913	.892411	.892909	76
77	.896132	.896373	.896852	.897332	.897811	.898290	.898768	77
78	.901863	.902094	.902554	.903015	.903475	.903935	.904394	78
79	.907365	.907586	.908028	.908469	.908909	.909349	.909790	79
80	Ī.912638	Ī.912850	1.913272	Ī.913695	Ī.914118	Ī.914539	Ī.914960	80
81	.917687	.917890	.918296	.918700	.919104	.919508	.919911	81
82	.922525	.922719	.923106	.923493	.923879	.924265	.924650	82
83	.927149	.927335	.927707	.928078	.928449	.928820	.929190	83
84	.931588	.931767	.932123	.932479	.932835	.933191	.933546	84
85	Ī.935848	Ī.936021	Ī.936365	Ī.936710	Ī.937053	Ī.937397	Ī.937740	85
86	.939965	.940134	.940471	.940807	.941145	.941481	.941817	86
87	.943995	.944162	.944494	.944826	.945157	.945488	.945820	87
88	.947967	.948138	.948478	.948818	.949158	.949496	.949836	88
89	.952033	.952182	.952480	.952778	.953075	.953372	.953669	89
90	Ī.955594	Ī.955719	Ī.955971	Ī.956222	Ī.956474	Ī.956724	Ī.956975	90
91	.958600	.958718	.958951	.959185	.959419	.959653	.959886	91
92	.961401	.961513	.961737	.961961	.962184	.962407	.962630	92
93	.964079	.964185	.964395	.964606	.964817	.965028	.965238	93
94	.966604	.966706	.966911	.967115	.967320	.967524	.967728	94
95	Ī.969052	Ī.969163	Ī.969385	Ī.969607	Ī.969829	Ī.970051	Ī.970272	95
96	.971710	.971808	.972004	.972119	.972395	.972590	.972786	96
97	.974053	.974191	.974468	.974745	.975022	.975298	.975574	97
98	.977363	.977598	.978068	.978537	.979004	.979473	.979940	98
99	.982966	.983689	.985132	.986570	.988004	.989432	.990856	99

* Months of Entry for Annual Valuation Dec. 31.

TABLE LI.

LOGARITHM OF THE SINGLE PREMIUM BY MONTHS, ON 1 INSURED FOR THE WHOLE LIFE.

4 PER CENT.

AGE. $x+n$	6m.	6½m. June.	7½m. May.	8½m. April.	9½m. March.	10½m. Feb.	11½m. Jan.	AGE. $x+n$
55	1̄.721717	1̄.722129	1̄.722951	1̄.723771	1̄.724590	1̄.725407	1̄.726224	55
56	.731548	.731956	.732770	.733581	.734392	.735202	.736008	56
57	.741268	.741670	.742474	.743276	.744076	.744876	.745673	57
58	.750863	.751260	.752053	.752844	.753634	.754422	.755209	58
59	.760326	.760717	.761499	.762279	.763059	.763836	.764612	59
60	1̄.769651	1̄.770036	1̄.770806	1̄.771574	1̄.772340	1̄.773105	1̄.773870	60
61	.778821	.779199	.779955	.780710	.781464	.782216	.782967	61
62	.787830	.788202	.788945	.789685	.790427	.791165	.791903	62
63	.796674	.797039	.797768	.798496	.799221	.799946	.800670	63
64	.805340	.805697	.806410	.807122	.807834	.808544	.809253	64
65	1̄.813818	1̄.814168	1̄.814866	1̄.815562	1̄.816257	1̄.816951	1̄.817644	65
66	.822105	.822446	.823127	.823808	.824486	.825164	.825841	66
67	.830191	.830524	.831187	.831852	.832513	.833175	.833835	67
68	.838073	.838398	.839045	.839692	.840338	.840983	.841626	68
69	.845746	.846061	.846691	.847319	.847946	.848572	.849197	69
70	1̄.853198	1̄.853505	1̄.854116	1̄.854726	1̄.855336	1̄.855945	1̄.856553	70
71	.860431	.860727	.861320	.861912	.862502	.863093	.863682	71
72	.867436	.867723	.868297	.868870	.869442	.870014	.870584	72
73	.874216	.874494	.875049	.875603	.876156	.876709	.877261	73
74	.880763	.881031	.881566	.882099	.882634	.883167	.883699	74
75	1̄.887075	1̄.887334	1̄.887849	1̄.888365	1̄.888879	1̄.889393	1̄.889906	75
76	.893158	.893407	.893903	.894400	.894895	.895390	.895885	76
77	.899007	.899246	.899723	.900200	.900675	.901151	.901626	77
78	.904623	.904853	.905310	.905768	.906225	.906682	.907137	78
79	.910009	.910229	.910668	.911106	.911545	.911982	.912420	79
80	1̄.915171	1̄.915381	1̄.915801	1̄.916221	1̄.916640	1̄.917060	1̄.917478	80
81	.920113	.920314	.920718	.921120	.921522	.921923	.922325	81
82	.924843	.925035	.925420	.925806	.926190	.926574	.926957	82
83	.929375	.929560	.929929	.930299	.930667	.931036	.931404	83
84	.933723	.933901	.934256	.934610	.934965	.935318	.935671	84
85	1̄.937912	1̄.938083	1̄.938426	1̄.938769	1.939111	1̄.939452	1.939795	85
86	.941985	.942153	.942488	.942823	.943159	.943494	.943828	86
87	.945985	.946151	.946482	.946813	.947142	.947473	.947802	87
88	.950005	.950175	.950513	.950851	.951190	.951527	.951865	88
89	.953818	.953965	.954262	.954559	.954855	.955151	.955446	89
90	1̄.957100	1̄.957225	1̄.957476	1̄.957726	1̄.957976	1̄.958226	1̄.958476	90
91	.960003	.960120	.960353	.960586	.960820	.961052	.961285	91
92	.962742	.962854	.963076	.963299	.963522	.963745	.963968	92
93	.965344	.965449	.965659	.965869	.966080	.966289	.966499	93
94	.967830	.967932	.968135	.968339	.968544	.968747	.968950	94
95	1̄.970383	1̄.970494	1̄.970716	1̄.970937	1̄.971158	1̄.971379	1̄.971600	95
96	.972883	.972981	.973176	.973371	.973567	.973761	.973956	96
97	.975712	.975850	.976125	.976400	.976676	.976951	.977226	97
98	.980174	.980407	.980874	.981339	.981805	.982269	.982734	98
99	.991567	.992276	.993691	.995101	.996506	.997907	.999304	99

TABLE LII.

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

In the order of time, x denotes the Age of Entry; $x+n$ the Present Age; m the unexpired Policy Years; and $n+m$ the whole Period of Insurance.

4 PER CENT.

PRESENT AGE.	$m=1.$	$1\frac{1}{2}.$	$\frac{1}{2}$m. d.	2.	$2\frac{1}{2}.$	$\frac{1}{2}$m. d.	3.	$3\frac{1}{2}.$	$\frac{1}{2}$m. d.	PRESENT AGE.
15	6.339	9.376	.253	12.414	15.330	.243	18.247	21.047	.233	15
16	6.361	9.414	.254	12.467	15.398	.244	18.329	21.143	.235	16
17	6.393	9.462	.256	12.530	15.476	.246	18.422	21.255	.236	17
18	6.426	9.510	.257	12.594	15.560	.247	18.526	21.377	.238	18
19	6.459	9.564	.259	12.669	15.655	.249	18.640	21.511	.239	19
20	6.502	9.628	.261	12.755	15.760	.250	18.766	21.661	.241	20
21	6.547	9.694	.262	12.841	15.873	.253	18.904	21.823	.243	21
22	6.591	9.765	.265	12.939	15.996	.255	19.053	21.997	.245	22
23	6.647	9.848	.267	13.049	16.132	.257	19.215	22.193	.248	23
24	6.704	9.933	.269	13.161	16.279	.260	19.398	22.406	.251	24
25	6.762	10.028	.272	13.295	16.445	.263	19.595	22.639	.254	25
26	6.842	10.142	.275	13.441	16.629	.266	19.817	22.905	.257	26
27	6.913	10.251	.278	13.590	16.826	.270	20.061	23.192	.261	27
28	6.995	10.385	.283	13.774	17.052	.273	20.331	23.508	.265	28
29	7.101	10.536	.286	13.971	17.300	.277	20.628	23.857	.269	29
30	7.198	10.685	.291	14.172	17.556	.282	20.940	24.228	.274	30
31	7.308	10.853	.295	14.399	17.844	.287	21.289	24.641	.279	31
32	7.431	11.042	.301	14.652	18.164	.293	21.677	25.104	.286	32
33	7.568	11.249	.307	14.931	18.524	.299	22.116	25.616	.292	33
34	7.719	11.485	.314	15.250	18.918	.306	22.586	26.169	.299	34
35	7.896	11.741	.320	15.587	19.343	.313	23.099	26.777	.307	35
36	8.065	12.004	.328	15.943	19.799	.321	23.656	27.436	.315	36
37	8.262	12.307	.337	16.351	20.316	.330	24.281	28.176	.325	37
38	8.486	12.645	.347	16.804	20.890	.341	24.976	28.988	.334	38
39	8.728	13.015	.357	17.302	21.512	.351	25.722	29.876	.346	39
40	8.999	13.417	.368	17.836	22.196	.363	26.555	30.853	.358	40
41	9.277	13.854	.381	18.430	22.942	.376	27.455	31.917	.372	41
42	9.612	14.350	.395	19.088	23.774	.391	28.460	33.101	.387	42
43	9.955	14.877	.410	19.800	24.676	.406	29.551	34.387	.403	43
44	10.346	15.470	.427	20.593	25.674	.423	30.756	35.808	.421	44
45	10.773	16.115	.445	21.458	26.770	.443	32.081	37.368	.441	45
46	11.239	16.826	.466	22.412	27.972	.463	33.532	39.076	.462	46
47	11.758	17.609	.488	23.460	29.294	.486	35.128	40.956	.486	47
48	12.321	18.463	.512	24.606	30.741	.511	36.877	43.014	.511	48
49	12.943	19.407	.539	25.870	32.336	.539	38.801	45.276	.540	49
50	13.628	20.444	.568	27.260	34.086	.569	40.912	47.755	.570	50
51	14.381	21.582	.600	28.783	36.002	.602	43.221	50.464	.604	51
52	15.206	22.828	.635	30.450	38.097	.637	45.744	53.435	.641	52
53	16.108	24.189	.673	32.271	40.397	.677	48.523	56.692	.681	53
54	17.095	25.691	.716	34.286	42.926	.720	51.566	60.266	.725	54
55	18.202	27.350	.762	36.499	45.711	.768	54.924	64.195	.773	55
56	19.396	29.162	.814	38.928	48.756	.819	58.583	68.472	.824	56
57	20.731	31.162	.869	41.593	52.090	.875	62.587	73.157	.881	57
58	22.175	33.333	.930	44.490	55.724	936	66.959	78.268	.942	58
59	23.756	35.715	.997	47.675	59.715	1.003	71.754	83.857	1.009	59
60	25.506	38.345	1.070	51.183	64.089	1.076	76.995	89.966	1.081	60
61	27.432	41.219	1.149	55.007	68.864	1.155	82.721	96.629	1.159	61
62	29.521	44.356	1.236	59.190	74.079	1.241	88.968	103.892	1.244	62
63	31.833	47.808	1.331	63.783	79.796	1.334	95.809	111.819	1.334	63
64	34.366	51.590	1.435	68.814	86.034	1.435	103.254	120.445	1.433	64
65*	37.154	55.727	1.548	74.300	92.841	1.545	111.382	129.816	1.536	65

$$\text{FORMULA, } A_{x+n}^{m} = 1,000 \frac{M_{x+n} - M_{x+n+m}}{D_{x+n}}.$$

TABLE LII. *113

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINU-
ING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	4.	4½.	½m.d.*	5.	5½.	½m.d.	6.	6½.	½m.d.	PRESENT AGE.
15	23.847	26.535	.224	29.223	31.808	.215	34.392	36.877	.207	15
16	23.957	26.663	.226	29.369	31.970	.217	34.572	37.073	.208	16
17	24.088	26.811	.227	29.535	32.154	.218	34.773	37.296	.210	17
18	24.229	26.971	.229	29.713	32.354	.220	34.994	37.537	.212	18
19	24.382	27.147	.230	29.911	32.574	.222	35.237	37.801	.214	19
20	24.556	27.344	.232	30.132	32.816	.224	35.501	38.095	.216	20
21	24.742	27.553	.234	30.364	33.080	.226	35.796	38.416	.218	21
22	24.940	27.784	.237	30.628	33.371	.229	36.114	38.764	.221	22
23	25.171	28.043	.239	30.916	33.691	.231	36.466	39.155	.224	23
24	25.415	28.321	.242	31.227	34.043	.235	36.859	39.583	.227	24
25	25.682	28.632	.246	31.581	34.434	.238	37.287	40.051	.230	25
26	25.994	28.982	.249	31.971	34.867	.241	37.762	40.572	.234	26
27	26.322	29.355	.253	32.387	35.330	.245	38.273	41.132	.238	27
28	26.685	29.768	.257	32.851	35.846	.250	38.841	41.755	.243	28
29	27.087	30.225	.262	33.363	36.416	.254	39.469	42.448	.248	29
30	27.515	30.714	.267	33.913	37.034	.260	40.156	43.196	.253	30
31	27.993	31.263	.273	34.534	37.720	.266	40.906	44.018	.259	31
32	28.532	31.871	.278	35.210	38.471	.272	41.731	44.924	.266	32
33	29.115	32.533	.285	35.950	39.296	.279	42.643	45.923	.273	33
34	29.752	33.260	.292	36.768	40.206	.287	43.644	47.022	.282	34
35	30.455	34.060	.300	37.665	41.207	.295	44.748	48.226	.290	35
36	31.216	34.930	.310	38.644	42.291	.304	45.938	49.536	.300	36
37	32.071	35.896	.319	39.721	43.494	.314	47.268	50.989	.310	37
38	33.001	36.959	.330	40.918	44.821	.325	48.724	52.583	.322	38
39	34.029	38.124	.341	42.219	46.269	.338	50.319	54.330	.334	39
40	35.151	39.401	.354	43.651	47.861	.351	52.071	56.247	.348	40
41	36.379	40.799	.368	45.218	49.602	.365	53.985	58.343	.363	41
42	37.742	42.345	.384	46.949	51.525	.381	56.102	60.657	.380	42
43	39.223	44.031	.401	48.838	53.623	.399	58.408	63.179	.398	43
44	40.861	45.889	.419	50.918	55.932	.418	60.946	65.954	.417	44
45	42.654	47.926	.439	53.197	58.462	.439	63.727	68.994	.439	45
46	44.621	50.159	.462	55.697	61.236	.462	66.775	72.322	.462	46
47	46.783	52.612	.486	58.441	64.279	.487	70.116	75.968	.488	47
48	49.151	55.297	.512	61.444	67.605	.513	73.767	79.950	.515	48
49	51.751	58.243	.541	64.734	71.247	.543	77.760	84.309	546	49
50	54.598	61.464	.572	68.330	75.235	.575	82.139	89.080	.578	50
51	57.708	64.992	.607	72.276	79.597	.610	86.919	94.292	.614	51
52	61.125	68.855	.644	76.586	84.370	.649	92.154	99.987	.653	52
53	64.861	73.087	.686	81.312	89.590	.690	97.868	106.198	.694	53
54	68.967	77.723	.730	86.479	95.290	.734	104.101	112.973	.739	54
55	73.465	82.794	.777	92.124	101.518	.783	110.912	120.368	.788	55
56	78.362	88.320	.830	98.278	108.303	.835	118.327	128.405	.840	56
57	83.726	94.367	.887	105.007	115.703	.891	126.399	137.148	.896	57
58	89.578	100.947	.947	112.316	123.742	.952	135.168	146.636	.956	58
59	95.960	108.133	1.014	120.287	132.495	1.017	144.704	156.942	1.020	59
60	102.936	115.954	1.085	128.972	142.022	1.088	155.071	168.117	1.087	60
61	110.537	124.479	1.162	138.420	152.358	1.162	166.296	180.211	1.160	61
62	118.817	133.738	1.243	148.660	163.556	1.241	178.452	193.262	1.234	62
63	127.829	143.812	1.332	159.794	175.684	1.324	191.574	207.348	1.315	63
64	137.636	154.727	1.424	171.819	188.786	1.414	205.754	222.516	1.397	64
65	148.250	166.550	1.525	184.850	202.929	1.507	221.007	238.801	1.483	65

* Note that ½ m. d. is $\frac{1}{24}$ of the difference of the integer or m columns, 5 − 4, etc.

TABLE LII.

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	$m = 7.$	$7\frac{1}{2}.$	$\frac{1}{2}$m. d.	8.	$8\frac{1}{2}.$	$\frac{1}{2}$m. d.	9.	$9\frac{1}{2}.$	$\frac{1}{2}$m. d.	PRESENT AGE.
15	39.362	41.751	.199	44.141	46.442	.192	48.743	50.959	.185	15
16	39.575	41.985	.201	44.394	46.714	.193	49.034	51.269	.186	16
17	39.818	42.247	.202	44.676	47.015	.195	49.354	51.614	.188	17
18	40.081	42.530	.204	44.979	47.345	.197	49.711	51.993	.190	18
19	40.365	42.842	.206	45.320	47.709	.199	50.099	52.407	.192	19
20	40.689	43.191	.209	45.693	48.110	.201	50.526	52.868	.195	20
21	41.035	43.566	.211	46.097	48.549	.204	51.001	53.373	.198	21
22	41.414	43.982	.214	46.550	49.034	.207	51.518	53.925	.201	22
23	41.844	44.445	.217	47.046	49.566	.210	52.087	54.533	.204	23
24	42.307	44.947	.220·	47.587	50.148	.213	52.709	55.198	.207	24
25	42.816	45.499	.224	48.181	50.788	.217	53.394	55.930	.211	25
26	43.381	46.110	.227	48.840	51.496	.221	54.153	56.744	.216	26
27	43.991	46.774	.232	49.556	52.271	.226	54.985	57.630	.220	27
28	44.670	47.513	.237	50.357	53.127	.231	55.897	58.602	.225	28
29	45.427	48.329	.242	51.231	54.065	.236	56.899	59.675	.231	29
30	46.236	49.206	.248	52.175	55.083	.242	57.991	60.841	.238	30
31	47.129	50.176	.254	53.223	56.209	.249	59.195	62.129	.245	31
32	48.117	51.246	.261	54.376	57.451	.256	60.526	63.545	.252	32
33	49.203	52.426	.269	55.649	58.813	.264	61.978	65.100	.260	33
34	50.401	53.718	.276	57.035	60.308	.273	63.581	66.808	.269	34
35	51.704	55.135	.286	58.566	61.949	.282	65.332	68.677	.279	35
36	53.134	56.681	.296	60.228	63.737	.292	67.245	70.720	.290	36
37	54.709	58.388	.307	62.067	65.711	.304	69.356	72.970	.301	37
38	56.443	60.266	.319	64.088	67.880	.316	71.672	75.442	.314	38
39	58.341	62.319	.332	66.298	70.254	.330	74.209	78.145	.328	39
40	60.422	64.573	.346	68.724	72.856	.344	76.988	81.108	.343	40
41	62.701	67.039	.362	71.376	75.701	.360	80.026	84.346	.360	41
42	65.212	69.753	.378	74.295	78.832	.378	83.369	87.906	.378	42
43	67.951	72.717	.397	77.482	82.249	.397	87.016	91.790	.398	43
44	70.962	75.971	.417	80.981	85.998	.418	91.015	96.045	.419	44
45	74.260	79.535	.440	84.809	90.096	.441	95.384	100.689	.442	45
46	77.870	83.431	.463	88.993	94.573	.465	100.153	105.764	.468	46
47	81.820	87.692	.489	93.564	99.469	.492	105.374	111.309	.495	47
48	86.132	92.349	.518	98.566	104.816	.521	111.065	117.358	.524	48
49	90.859	97.443	.549	104.027	110.656	.552	117.286	123.957	.556	49
50	96.020	103.009	.582	109.998	117.031	.586	124.064	131.142	.590	50
51	101.665	109.085	.618	116.504	123.971	.622	131.438	138.956	.627	51
52	107.821	115.704	.657	123.588	131.526	.662	139.463	147.453	.666	52
53	114.528	122.916	.699	131.304	139.748	.704	148.192	156.680	.707	53
54	121.844	130.776	.744	139.707	148.685	.748	157.663	166.686	.752	54
55	129.825	139.331	.792	148.837	158.391	.796	167.945	177.534	.799	55
56	138.482	148.609	.844	158.737	168.902	.847	179.067	189.257	.849	56
57	147.898	158.687	.899	169.476	180.291	.901	191.106	201.919	.901	57
58	158.104	169.600	.958	181.095	192.588	.958	204.081	215.554	.956	58
59	169.179	181.413	1.020	193.648	205.862	1.018	218.076	230.220	1.012	59
60	181.164	194.189	1.085	207.213	220.162	1.079	233.111	245.966	1.071	60
61	194.125	207.959	1.153	221.793	235.526	1.144	249.259	262.826	1.131	61
62	208.072	222.774	1.225	237.476	252.000	1.210	266.524	280.820	1.191	62
63	223.123	238.706	1.299	254.290	269.629	1.278	284.968	299.989	1.252	63
64	239.277	255.776	1.375	272.275	288.432	1.346	304.590	320.325	1.311	64
65*	256.596	274.023	1.452	291.450	308.421	1.414	325.392	341.837	1.370	65

TABLE LII. *115

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	10.	10½.	½m. d.	11.	11½.	½m.d.	12.	12½.	½m.d.	PRESENT AGE.
15	53.176	55.310	.178	57.444	59.506	.172	61.568	63.557	.166	15
16	53.503	55.661	.180	57.820	59.902	.174	61.984	63.995	.168	16
17	53.874	56.054	.182	58.234	60.340	.176	62.446	64.487	.170	17
18	54.275	56.480	.184	58.685	60.821	.178	62.958	65.024	.172	18
19	54.715	56.952	.186	59.189	61.353	.180	63.517	65.614	.175	19
20	55.210	57.476	.189	59.742	61.937	.183	64.132	66.262	.178	20
21	55.746	58.045	.192	60.343	62.574	.186	64.804	66.971	.181	21
22	56.332	58.667	.195	61.003	63.272	.189	65.542	67.750	.184	22
23	56.979	59.356	.198	61.732	64.044	.193	66.356	68 612	.188	23
24	57.686	60.107	.202	62.529	64.892	.197	67.255	69.557	.192	24
25	58.466	60.941	.206	63.415	65.825	.201	68.235	70.589	.196	25
26	59.336	61.860	.210	64.385	66.851	.206	69.316	71.730	.201	26
27	60.274	62.857	.215	65.439	67.968	.211	70.497	72.976	.207	27
28	61.308	63.957	.221	66.606	69.202	.216	71.799	74.350	.213	28
29	62.450	65.170	.227	67.890	70.563	.223	73.235	75.859	.219	29
30	63.691	66.491	.233	69.291	72.040	.229	74.790	77.503	.226	30
31	65.063	67.944	.240	70.826	73.669	.237	76.511	79.313	.234	31
32	66.565	69.544	.248	72.522	75.459	.245	78.396	81.301	.242	32
33	68.222	71.300	.257	74.378	77.422	.254	80.467	83.482	.251	33
34	70.034	73.225	.266	76.416	79.577	.263	82.737	85.872	.261	34
35	72.023	75.336	.276	78.650	81.937	.274	85.224	88.491	.272	35
36	74.194	77.641	.287	81.087	84.513	.286	87.939	91.350	.284	36
37	76.585	80.178	.299	83.772	87.348	.298	90.925	94.491	.297	37
38	79.211	82.963	.313	86.715	90.456	.312	94.197	97.934	.311	38
39	82.082	86.008	.327	89.933	93.854	.327	97.775	101.696	.327	39
40	85.227	89.342	.343	93.457	97.573	.343	101.689	105.812	.344	40
41	88.666	92.987	.360	97.308	101.636	.361	105.964	110.302	.362	41
42	92.444	96.988	.379	101.533	106.089	.380	110.645	115.216	.381	42
43	96.564	101.350	.399	106.136	110.938	.400	115.740	120.569	.402	43
44	101.074	106.121	.421	111.167	116.242	.423	121.316	126.417	.425	44
45	105.994	111.329	.445	116.665	122.027	.447	127.390	132.791	.450	45
46	111.375	117.016	.470	122.657	128.337	.473	134.016	139.732	.476	46
47	117.245	123.222	.498	129.199	135.213	.501	141.228	147.281	.504	47
48	123.650	129.983	.528	136.316	142.689	.531	149.062	155.479	.535	48
49	130.629	137.343	.560	144.057	150.817	.563	157.577	164.382	.567	49
50	138.219	145.346	.594	152.472	159.647	.598	166.821	174.033	.601	50
51	146.474	154.042	.631	161.611	169.219	.634	176.827	184.473	.637	51
52	155.444	163.477	.669	171.509	179.582	.673	187.655	195.757	.675	52
53	165.168	173.698	.711	182.229	190.791	.714	199.353	207.936	.715	53
54	175.709	184.765	.755	193.821	202.899	.757	211.977	221.053	.756	54
55	187.123	196.735	.801	206.347	215.956	.801	225.566	235.159	.799	55
56	199.446	209.633	.849	219.820	229.990	.848	240.159	250.270	.843	56
57	212.732	223.526	.900	234.320	245.052	.894	255.784	266.438	.888	57
58	227.028	238.435	.951	249.842	261.166	.944	272.490	283.677	.932	58
59	242.363	254.418	1.005	266.473	278.382	.992	290.291	302.013	.977	59
60	258.821	271.520	1.058	284.219	296.719	1.042	309.219	321.461	1.020	60
61	276.393	289.748	1.113	303.102	316.180	1.090	329.258	341.994	1.061	61
62	295.116	309.117	1.167	323.118	336.752	1.136	350.387	363.598	1.101	62
63	315.011	329.640	1.219	344.269	358.445	1.181	372.620	386.250	1.136	63
64	336.060	351.307	1.271	366.555	381.215	1.222	395.876	409.865	1.166	64
65	358.282	374.094	1.318	389.906	404.994	1.257	420.081	434.369	1.191	65

TABLE LII.

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	$m=13.$	$13\frac{1}{2}.$	$\frac{1}{2}$m. d.	14.	$14\frac{1}{2}.$	$\frac{1}{2}$m.d.	15.	$15\frac{1}{2}.$	$\frac{1}{2}$m.d.	PRESENT AGE.
15	65.546	67.467	.160	69.389	71.250	.155	73.112	74.913	.150	15
16	66.007	67.956	.162	69.905	71.791	.157	73.677	75.504	.152	16
17	66.527	68.501	.165	70.475	72.388	.159	74.300	76.156	.155	17
18	67.091	69.094	.167	71.096	73.039	.162	74.983	76.871	.157	18
19	67.710	69.744	.170	71.779	73.756	.165	75.732	77.656	.160	19
20	68.393	70.463	.173	72.532	74.546	.168	76.560	78.525	.164	20
21	69.138	71.247	.176	73.356	75.413	.171	77.471	79.475	.167	21
22	69.958	72.112	.180	74.267	76.366	.175	78.464	80.514	.171	22
23	70.868	73.066	.183	75.264	77.410	.179	79.557	81.658	.175	23
24	71.858	74.106	.187	76.353	78.554	.183	80.755	82.912	.180	24
25	72.943	75.248	.192	77.554	79.813	.188	82.072	84.292	.185	25
26	74.145	76.512	.197	78.878	81.203	.194	83.527	85.811	.190	26
27	75.454	77.889	.203	80.324	82.715	.199	85.107	87.466	.197	27
28	76.901	79.406	.209	81.911	84.383	.206	86.854	89.291	.203	28
29	78.484	81.073	.216	83.662	86.214	.213	88.767	91.292	.210	29
30	80.215	82.890	.223	85.565	88.210	.220	90.854	93.474	.218	30
31	82.116	84.887	.231	87.659	90.404	.229	93.149	95.871	.227	31
32	84.205	87.082	.240	89.958	92.811	.238	95.665	98.502	.236	32
33	86.497	89.487	.249	92.478	95.451	.248	98.424	101.383	.247	33
34	89.007	92.124	.260	95.240	98.342	.259	101.444	104.537	.258	34
35	91.759	95.011	.271	98.263	101.506	.270	104.748	107.987	.270	35
36	94.760	98.160	.283	101.560	104.956	.283	108.353	111.750	.283	36
37	98.058	101.620	.297	105.182	108.745	.297	112.308	115.876	.297	37
38	101.670	105.408	.312	109.146	112.889	.312	116.632	120.385	.313	38
39	105.618	109.545	.327	113.473	117.411	.328	121.348	125.299	.329	39
40	109.934	114.067	.344	118.199	122.345	.346	126.491	130.661	.348	40
41	114.641	118.993	.363	123.346	127.723	.365	132.101	136.501	.367	41
42	119.787	124.384	.383	128.981	133.602	.385	138.222	142.875	.388	42
43	125.398	130.252	.405	135.106	139.994	.407	144.882	149.801	.410	43
44	131.518	136.655	.428	141.792	146.961	.431	152.130	157.332	.433	44
45	138.191	143.626	.453	149.060	154.528	.456	159.997	165.504	.459	45
46	145.448	151.200	.479	156.952	162.744	.483	168.536	174.366	.486	46
47	153.334	159.428	.508	165.523	171.659	.511	177.794	183.962	.514	47
48	161.896	168.356	.538	174.815	181.309	.541	187.803	194.329	.544	48
49	171.188	178.029	.570	184.870	191.745	.573	198.621	205.522	.575	49
50	181.244	188.492	.604	195.740	203.015	.606	210.290	217.582	.608	50
51	192.119	199.793	.640	207.468	215.161	.641	222.854	230.545	.641	51
52	203.860	211.982	.677	220.104	228.225	.677	236.345	244.451	.676	52
53	216.518	225.099	.715	233.680	242.246	.714	250.812	259.328	.710	53
54	230.129	239.190	.755	248.250	257.258	.751	266.266	275.209	.745	54
55	244.753	254.291	.795	263.830	273.298	.789	282.767	292.121	.779	55
56	260.381	270.419	.837	280.456	290.372	.826	300.288	310.048	.813	56
57	277.091	287.616	.877	298.141	308.501	.863	318.860	329.006	.846	57
58	294.864	305.875	.918	316.887	327.671	.899	338.455	348.957	.875	58
59	313.736	325.216	.957	336.696	347.875	.932	359.055	369.888	.903	59
60	333.702	345.624	.994	357.545	369.097	.963	380.648	391.755	.926	60
61	354.730	367.071	1.028	379.413	391.279	.989	403.145	414.468	.944	61
62	376.810	389.514	1.059	402.217	414.338	1.010	426.459	437.938	.957	62
63	399.880	412.885	1.084	425.890	438.206	1.026	450.523	462.071	.962	63
64	423.853	437.100	1.104	450.348	462.770	1.035	475.192	486.720	.961	64
65*	448.657	462.055	1.117	475.452	487.886	1.036	500.319	511.728	.951	65

TABLE LII.

SINGLE PREMIUM OR RESERVE (A), FOR TEMPORARY INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	$m=1.$	2.	3.	4.	5.	6.	7.	PRESENT AGE.
66	40.184	80.300	120.184	159.777	198.892	237.392	275.097	66
67	43.540	86.829	129.802	172.255	214.042	254.965	294.818	67
68	47.155	93.967	140.213	185.732	230.311	273.724	315.790	68
69	51.195	101.770	151.552	200.305	247.783	293.788	338.024	69
70	55.557	110.241	163.796	215.949	266.485	315.078	361.442	70
71	60.360	119.471	177.037	232.818	286.453	337.628	386.094	71
72	65.594	129.472	191.369	250.886	307.673	361.453	411.880	72
73	71.297	140.383	206.812	270.195	330.221	386.505	438.740	73
74	77.604	152.223	223.420	290.846	354.069	412.745	466.583	74
75	84.417	164.963	241.243	312.767	379.147	440.055	495.220	75
76	91.830	178.796	260.341	336.020	405.461	468.353	524.567	76
77	99.995	193.756	280.772	360.616	432.931	497.565	554.382	77
78	108.829	209.830	302.505	386.441	461.463	527.411	584.471	78
79	118.447	227.130	325.565	413.546	490.885	557.801	614.568	79
80	128.910	245.665	350.020	441.753	521.122	588.455	644.371	80
81	140.224	265.556	375.719	471.043	551.910	619.066	673.718	81
82	152.600	286.742	402.805	501.266	583.033	649.575	702.195	82
83	165.825	309.300	431.016	532.095	614.353	679.402	731.612	83
84	180.310	333.275	460.305	563.681	645.430	711.044	761.097	84
85	195.801	358.404	490.730	595.372	679.361	743.431	788.654	85

PRESENT AGE.	$m=8.$	9.	10.	11.	12.	13.	14.	PRESENT AGE.
66	311.816	347.395	381.607	414.250	445.163	474.150	501.052	66
67	333.435	370.566	405.995	439.548	471.009	500.207	526.998	67
68	356.239	394.832	431.382	465.653	497.459	526.643	553.076	68
69	380.231	420.203	457.683	492.467	524.384	553.291	579.128	69
70	405.351	446.522	484.732	519.792	551.547	579.928	604.877	70
71	431.538	473.713	512.411	547.460	578.788	606.326	630.152	71
72	458.680	501.622	540.515	575.278	605.835	632.275	654.704	72
73	486.669	530.079	568.879	602.986	632.496	657.530	678.320	73
74	515.345	558.929	597.240	630.389	658.509	681.863	700.867	74
75	544.526	587.868	625.369	657.183	683.602	705.102	722.104	75
76	573.981	616.735	653.006	683.126	707.638	727.022	742.581	76
77	603.542	645.245	679.879	708.063	730.351	748.240	761.886	77
78	632.877	673.076	705.800	731.669	752.433	768.263	779.443	78
79	661.711	700.075	730.413	754.764	773.339	786.450	795.241	79
80	689.875	725.860	754.742	776.775	792.326	802.752	809.424	80
81	716.936	751.624	778.085	796.763	809.285	817.298	822.118	81
82	744.430	776.649	799.389	814.636	824.392	830.261	833.541	82
83	771.440	799.552	818.399	830.460	837.715	841.770	843.949	83
84	796.426	820.113	835.270	844.388	849.484	852.222	853.469	84
85	818.973	838.374	850.046	856.569	860.073	861.670	862.352	85

TABLE LIII.

ANNUAL PREMIUM (P) OF TEMPORARY INSURANCE OF 1000 FOR m YEARS.

ALSO $\lambda(\pi - P)$.*

4 PER CENT.

AGE.	$m=1.$		2.		3.		4.		AGE.
$x.$	P.	$\lambda(\pi-P).$	P.	$\lambda(\pi-P).$	P.	$\lambda(\pi-P).$	P.	$\lambda(\pi-P).$	$x.$
15	6.339	0.646159	6.349	0.645088	6.363	0.643740	6.378	0.642295	15
16	6.361	.666022	6.377	.664539	6.392	.663059	6.408	.661562	16
17	6.393	.685150	6.409	.683844	6.425	.682346	6.443	.680708	17
18	6.426	.704502	6.442	.703069	6.461	.701461	6.481	.699713	18
19	6.459	.724063	6.480	.722280	6.501	.720520	6.522	.718763	19
20	6.502	0.743023	6.524	0.741335	6.545	0.739587	6.569	0.737749	20
21	6.547	.762213	6.568	.760500	6.594	.758675	6.619	.756706	21
22	6.591	.781648	6.619	.779692	6.646	.777720	6.673	.775721	22
23	6.647	.800593	6.675	.798740	6.703	.796760	6.735	.794541	23
24	6.704	.819800	6.733	.817846	6.767	.815632	6.801	.813358	24
25	6.762	0.839277	6.801	0.836814	6.836	0.834539	6.873	0.832188	25
26	6.842	.857724	6.876	.855689	6.914	.853366	6.958	.850718	26
27	6.913	.877101	6.953	.874716	7.000	.872014	7.046	.869338	27
28	6.995	.896179	7.047	.893342	7.095	.890663	7.145	.887858	28
29	7.101	.914412	7.148	.911939	7.199	.909193	7.253	.906320	29
30	7.198	0.933538	7.252	0.930807	7.309	0.927915	7.369	0.924798	30
31	7.308	.952468	7.368	.949558	7.432	.946425	7.498	.943141	31
32	7.431	.971234	7.498	.968128	7.568	.964853	7.644	.961235	32
33	7.568	.989881	7.641	.986585	7.722	.982942	7.802	.979305	33
34	7.719	1.008430	7.805	1.004747	7.888	1.001140	7.975	.997379	34
35	7.896	1.026460	7.979	1.023012	8.068	1.019327	8.166	1.015296	35
36	8.065	.045362	8.161	.041571	8.264	.037507	8.372	.033181	36
37	8.262	.063840	8.371	.059760	8.485	.055417	8.604	.050823	37
38	8.486	.081934	8.604	.077663	8.730	.073089	8.857	.068422	38
39	8.728	.100102	8.860	.095477	8.993	.090880	9.136	.085754	39
40	8.999	1.117984	9.135	1.113515	9.286	1.108366	9.442	1.103102	40
41	9.277	.136381	9.440	.131161	9.604	.125917	9.776	.120288	41
42	9.612	.153845	9.779	.148674	9.959	.143115	10.147	.137178	42
43	9.955	.171864	10.146	.166291	10.344	.160342	10.551	.154077	43
44	10.346	.189423	10.554	.183514	10.771	.177300	10.999	.170673	44
45	10.773	1.206904	11.000	1.200718	11.240	1.194123	11.489	1.187120	45
46	11.239	.224347	11.492	.217759	11.754	.210787	12.028	.203401	46
47	11.758	.241475	12.032	.234588	12.320	.227262	12.622	.219402	47
48	12.321	.258627	12.624	.251332	12.941	.243507	13.273	.235204	48
49	12.943	.275547	13.276	.267802	13.625	.259532	13.989	.250767	49
50	13.628	1.292263	13.995	1.284037	14.377	1.275337	14.775	1.266078	50
51	14.381	.308803	14.782	.300163	15.200	.290977	15.635	.281179	51
52	15.206	.325195	15.645	.316105	16.101	.306388	16.583	.295944	52
53	16.108	.341466	16.588	.331851	17.095	.321472	17.622	.310432	53
54	17.095	.357628	17.633	.347236	18.187	.336294	18.768	.324502	54
55	18.202	1.373155	18.781	1.362382	19.393	1.350687	20.027	1.338234	55
56	19.396	.388816	20.044	.377181	20.711	.364847	21.404	.351666	56
57	20.731	.403844	21.431	.391695	22.158	.378680	22.918	.364650	57
58	22.175	.418941	22.940	.406085	23.742	.392188	24.577	.377242	58
59	23.756	.433834	24.603	.420046	25.485	.405246	26.395	.389423	59
60	25.506	1.448213	26.437	1.433548	27.397	1.417933	28.394	1.401053	60
61	27.432	.462217	28.441	.446845	29.494	.430164	30.584	.412207	61
62	29.521	.476214	30.637	.459719	31.791	.441965	32.988	.422773	62
63	31.833	.489607	33.054	.472085	34.319	.453137	35.622	.432525	63
64	34.366	.502669	35.708	.483974	37.085	.463577	38.511	.442041	64
65	37.154	.515179	38.610	.495002	40.122	.473918	41.668	.450779	65

FORMULA, $\quad P_x^m = 1000 \dfrac{M_x - M_{x+m}}{N_x - N_{x+m}}; \quad \pi_x = \dfrac{1000\, M_x}{N_x}.$

TABLE LIII.

ANNUAL PREMIUM (P) OF TEMPORARY INSURANCE OF 1,000 FOR m YEARS.
ALSO $\lambda\,(\pi - P).$*

4 PER CENT.

AGE.	5.		6.		7.		8.		AGE.
x.	P.	$\lambda\,(\pi-P)$.	P.	$\lambda\,(\pi-P)$.	P.	$\lambda\,(\pi-P)$.	P.	$\lambda\,(\pi-P)$.	x.
15	6.393	0.640832	6.409	0.639220	6.426	0.637504	6.443	0.635731	15
16	6.425	.659952	6.443	.658221	6.461	.656452	6.481	.654585	16
17	6.462	.678969	6.481	.677201	6.502	.675334	6.523	.673364	17
18	6.501	.697950	6.523	.696094	6.545	.694120	6.568	.692079	18
19	6.545	.716909	6.569	.714943	6.593	.712909	6.619	.710715	19
20	6.594	0.735785	6.619	0.733765	6.646	0.731583	6.675	0.729294	20
21	6.645	.754701	6.674	.752516	6.704	.750229	6.735	.747838	21
22	6.704	.773521	6.735	.771232	6.767	.768846	6.802	.766238	22
23	6.768	.792264	6.801	.789893	6.838	.787280	6.876	.784583	23
24	6.836	.810996	6.876	.808378	6.915	.805678	6.957	.802847	24
25	6.915	0.829545	6.957	0.826847	7.000	0.824014	7.046	0.821056	25
26	7.002	.848043	7.047	.845218	7.094	.842270	7.144	.839126	26
27	7.094	.866511	7.144	.863582	7.196	.860440	7.251	.857136	27
28	7.197	.884938	7.252	.881811	7.309	.878511	7.371	.874936	28
29	7.310	.903209	7.371	.899934	7.436	.896365	7.502	.892676	29
30	7.433	0.921515	7.501	0.917931	7.571	0.914245	7.644	0.910386	30
31	7.571	.939550	7.644	.935869	7.720	.932026	7.801	.927918	31
32	7.721	.957574	7.801	.953739	7.885	.949646	7.974	.945294	32
33	7.886	.975510	7.974	.971437	8.057	.967094	8.165	.962484	33
34	8.068	.993329	8.165	.988999	8.268	.984402	8.374	.979615	34
35	8.267	1.010988	8.375	1.006399	8.486	1.001641	8.604	0.996488	35
36	8.486	.028590	8.602	.023843	8.727	.018690	8.855	1.013311	36
37	8.726	.046103	8.856	.040956	8.991	.035596	9.133	.029884	37
38	8.993	.063290	9.135	.057964	9.284	.052274	9.439	.046233	38
39	9.284	.080462	9.440	.074798	9.604	.068780	9.774	.062407	39
40	9.605	1.097463	9.776	1.091462	9.955	1.085120	10.143	1.078367	40
41	9.956	.114305	10.144	.107983	10.341	.101252	10.547	.094105	41
42	10.345	.130901	10.551	.124215	10.767	.117103	10.993	.109558	42
43	10.769	.147405	10.996	.140321	11.233	.132806	11.481	.124785	43
44	11.237	.163630	11.486	.156159	11.747	.148180	12.019	.139689	44
45	11.751	1.179693	12.025	1.171750	12.311	1.163306	12.610	1.154311	45
46	12.316	.195498	12.617	.187096	12.930	.178153	13.257	.168630	46
47	12.937	.211053	13.267	.202162	13.610	.192696	13.968	.182614	47
48	13.619	.226367	13.980	.216961	14.356	.206942	14.749	.196212	48
49	14.368	.241427	14.763	.231474	15.176	.220813	15.606	.209439	49
50	15.189	1.256204	15.624	1.245613	16.076	1.234321	16.548	1.222199	50
51	16.093	.270661	16.568	.259449	17.065	.247406	17.581	.234542	51
52	17.083	.284815	17.606	.272856	18.150	.260083	18.713	.246429	52
53	18.174	.298553	18.746	.285880	19.339	.272329	19.955	.257783	53
54	19.370	.311934	19.995	.298493	20.645	.284063	21.319	.268563	54
55	20.685	1.324922	21.369	1.310618	22.080	1.295250	22.814	1.278781	55
56	22.125	.337489	22.875	.322259	23.649	.305935	24.452	.288353	56
57	23.708	.349562	24.526	.333402	25.372	.315984	26.247	.297240	57
58	25.439	.361242	26.334	.343990	27.258	.325424	28.212	.305386	58
59	27.339	.372347	28.317	.353971	29.326	.334127	30.362	.312640	59
60	29.426	1.382882	30.494	1.363248	31.591	1.341971	32.720	1.319205	60
61	31.715	.392792	32.876	.371730	34.072	.349229	35.294	.324817	61
62	34.218	.401931	35.486	.379712	36.782	.355582	38.110	.329362	62
63	36.967	.410631	38.341	.386804	39.752	.360895	41.188	.332839	63
64	39.969	.418541	41.470	.392957	42.996	.365247	44.549	.335136	64
65	43.262	.425541	44.887	.398203	46.541	.368478	48.217	.336167	65

* In valuing *Term Policies* by Table LXIII, $(\pi - P)\ Bf$ will be *subtractive*.

TABLE LIII.

ANNUAL PREMIUM (P) OF TEMPORARY INSURANCE OF 1000 FOR m YEARS.
ALSO $\lambda(\pi-P)$.*

4 PER CENT.

AGE.	$m=9.$		10.		11.		12.		AGE.
$x.$	P.	$\lambda(\pi-P).$	P.	$\lambda(\pi-P)\cdot$	P.	$\lambda(\pi-P).$	P.	$\lambda(\pi-P).$	$x.$
15	6.462	0.633870	6.482	0.631890	6.502	0.629841	6.523	0.627645	15
16	6.501	.652608	6.522	.650560	6.545	.648358	6.569	.646055	16
17	6.545	.671315	6.569	.669115	6.593	.666813	6.619	.664401	17
18	6.593	.689886	6.619	.687584	6.646	.685183	6.675	.682581	18
19	6.646	.708419	6.674	.706021	6.705	.703421	6.736	.700709	19
20	6.704	0.726900	6.736	0.724295	6.769	0.721592	6.803	0.718741	20
21	6.768	.745231	6.803	.742532	6.839	.739681	6.877	.736702	21
22	6.838	.763537	6.876	.760694	6.916	.757714	6.957	.754542	22
23	6.916	.781738	6.957	.778765	7.001	.775606	7.046	.772270	23
24	7.000	.799881	7.046	.796722	7.094	.793392	7.145	.789811	24
25	7.094	0.817907	7.144	0.814585	7.197	0.811003	7.252	0.807277	25
26	7.197	.835813	7.253	.832240	7.311	.828519	7.371	.824619	26
27	7.310	.853562	7.371	.849848	7.434	.845953	7.501	.841813	27
28	7.435	.871237	7.501	.867354	7.571	.863218	7.644	.858826	28
29	7.571	.888805	7.645	.884685	7.721	.880305	7.802	.875655	29
30	7.720	0.906271	7.801	0.901898	7.886	0.897254	7.974	0.892401	30
31	7.885	.923554	7.974	.918920	8.066	.914081	8.164	.908872	31
32	8.067	.940668	8.164	.935843	8.266	.930648	8.372	.925198	32
33	8.266	.957678	8.373	.952498	8.485	.947064	8.602	.941282	33
34	8.486	.974448	8.603	.969034	8.726	.963270	8.854	.957146	34
35	8.727	0.991097	8.856	0.985349	8.990	0.979248	9.132	0.972783	35
36	8.990	1.007578	9.132	1.001491	9.280	.995046	9.435	.988189	36
37	9.282	.023816	9.437	.017393	9.599	1.010559	9.769	1.003301	37
38	9.602	.039835	9.772	.033028	9.950	.025796	10.137	.018117	38
39	9.953	.055630	10.140	.048425	10.335	.040775	10.540	.032621	39
40	10.339	1.071190	10.544	1.063574	10.759	1.055448	10.982	1.046804	40
41	10.762	.086519	10.988	.078425	11.223	.069814	11.468	.060645	41
42	11.229	.101504	11.476	.092935	11.734	.083808	12.002	.074092	42
43	11.741	.116252	12.011	.107164	12.293	.097490	12.587	.087184	43
44	12.303	.130650	12.599	.121025	12.908	.110770	13.230	.099802	44
45	12.921	1.144737	13.244	1.134535	13.583	1.123621	13.934	1.111980	45
46	13.597	158485	13.953	.147629	14.323	.136048	14.708	.123637	46
47	14.342	.171819	14.730	.160304	15.136	.147960	15.556	.134772	47
48	15.158	.184764	15.584	.172490	16.027	.159378	16.485	.145355	48
49	16.055	.197237	16.520	.184203	17.003	.170264	17.504	.155314	49
50	17.038	1.209248	17.546	1.195400	18.073	1.180543	18.620	1.164597	50
51	18.116	.220788	18.672	.206028	19.247	.190187	19.841	.173207	51
52	19.298	.231771	19.905	.216038	20.531	.199176	21.178	.181035	52
53	20.595	.242162	21.255	.225422	21.938	.207409	22.641	.188040	53
54	22.016	.251953	22.736	.234076	23.478	.214850	24.243	.194125	54
55	23.574	1.261047	24.358	1.241974	25.166	1.221407	25.993	1.199187	55
56	25.280	.269440	26.133	.249038	27.008	.226989	27.906	.203328	56
57	27.149	.277017	28.075	.255146	29.024	.231688	29.992	.206313	57
58	29.191	.283700	30.197	.260457	31.223	.235299	32.269	.208025	58
59	31.428	.289625	32.515	.264700	33.625	.237667	34.750	.208422	59
60	33.872	1.294528	35.050	1.267751	36.245	1.238777	37.455	1.207347	60
61	36.544	.298311	37.815	.269622	39.102	.238491	40.398	.204706	61
62	39.460	.300979	40.830	.270165	42.211	.236713	43.595	.200380	62
63	42.646	.302366	44.118	.269269	45.595	.233311	47.073	.194101	63
64	46.119	.302418	47.697	.266860	49.277	.228062	50.844	.185804	64
65	49.902	.301039	51.592	.262680	53.272	.220883	54.929	.175306	65

* In valuing *Term Policies* by Table LXIII, $(\pi-P)$ Bf will be *subtractive*.

TABLE LIII. *121

ANNUAL PREMIUM (P) OF TEMPORARY INSURANCE OF 1000 FOR m YEARS.
ALSO $\lambda\,(\pi - P)$.*

4 PER CENT.

AGE.	$m=13.$		14.		15.		AGE.
$x.$	P.	$\lambda\,(\pi - P).$	P.	$\lambda\,(\pi - P).$	P.	$\lambda\,(\pi - P).$	$x.$
15	6.546	0.625336	6.569	0.622924	6.594	0.620319	15
16	6.593	.643643	6.620	.641039	6.647	.638319	16
17	6.647	.661795	6.675	.659077	6.705	.656216	17
18	6.705	.679867	6.736	.677006	6.769	.674007	18
19	6.769	.697854	6.803	.694858	6.839	.691677	19
20	6.839	0.715751	6.877	0.712573	6.917	0.709226	20
21	6.916	.733532	6.958	.730182	7.002	.726594	21
22	7.001	.751204	7.047	.747616	7.095	.743870	22
23	7.095	.768685	7.145	.764946	7.198	.761015	23
24	7.198	.786078	7.252	.782156	7.310	.777990	24
25	7.310	0.803363	7.371	0.799202	7.434	0.794785	25
26	7.435	.820466	7.501	.816058	7.572	.811378	26
27	7.571	.837412	7.644	.832740	7.721	.827846	27
28	7.721	.854168	7.801	.849285	7.886	.844048	28
29	7.886	.870786	7.975	.865563	8.067	.860072	29
30	8.067	0.887182	8.164	0.881705	8.265	0.875876	30
31	8.265	.903407	8.372	.897595	8.483	.891421	31
32	8.484	.919399	8.601	.913241	8.723	.906715	32
33	8.725	.935143	8.853	.928636	8.987	.921720	33
34	8.989	.950662	9.130	.943764	9.276	.936437	34
35	9.279	0.965909	9.433	0.958602	9.594	0.950845	35
36	9.596	.980904	9.765	.973169	9.942	.964925	36
37	9.946	.995592	10.132	.987375	10.325	.978631	37
38	10.331	1.009931	10.534	1.001221	10.746	.991945	38
39	10.753	.023943	10.975	.014702	11.207	1.004864	39
40	11.216	1.037598	11.460	1.027799	11.713	1.017357	40
41	11.724	.050885	11.989	.040486	12.267	.029368	41
42	12.282	.063739	12.573	.052671	12.876	.040863	42
43	12.893	.076163	13.211	.064406	13.543	.051815	43
44	13.564	.088101	13.913	.075567	14.274	.062175	44
45	14.301	1.099505	14.681	1.086178	15.074	1.071927	45
46	15.108	.110376	15.522	.096198	15.951	.080996	46
47	15.992	.120667	16.444	.105546	16.911	.089324	47
48	16.961	.130316	17.453	.114180	17.961	.096891	48
49	18.022	.139272	18.557	.122080	19.109	.103598	49
50	19.184	1.147512	19.765	1.129137	20.364	1.109387	50
51	20.455	.154948	21.086	.135317	21.735	.114174	51
52	21.845	.161532	22.530	.140519	23.231	.117843	52
53	23.365	.167167	24.106	.144633	24.864	.120438	53
54	25.026	.171744	25.827	.147716	26.643	.121755	54
55	26.842	1.175338	27.704	1.149560	28.583	1.121651	55
56	28.820	.177745	29.750	.150034	30.692	.120077	56
57	30.979	.178815	31.977	.149081	32.985	.116863	57
58	33.329	.178529	34.399	.146556	35.475	.111893	58
59	35.888	.176713 ·	37.031	.142323	38.174	.105012	59
60	38.672	1.173251	39.890	1.136245	41.102	1.095957	60
61	41.696	.168027	42.989	.128075	44.269	.084614	61
62	44.978	.160787	46.346	.117699	47.688	.070781	62
63	48.537	.151417	49.975	.104913	51.381	.054124	63
64	52.387	.139747	53.896	.089416	55.358	.034441	64
65	56.552	.125466	58.126	.070998	59.636	.011425	65

TABLE LIV.

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	$m = 1.$	$1\frac{1}{2}$.	$\frac{1}{2}$m. d.	2.	$2\frac{1}{2}$.	$\frac{1}{2}$m. d.	3.	$3\frac{1}{2}$.	$\frac{1}{2}$m. d.	PRESENT AGE.
15	961.538	943.169	1.531	924.800	907.254	1.462	889.708	872.949	1.397	15
16	961.538	943.169	1.531	924.801	907.256	1.462	889.711	872.953	1.397	16
17	961.538	943.170	1.531	924.802	907.258	1.462	889.715	872.959	1.396	17
18	961.538	943.171	1.531	924.803	907.261	1.462	889.718	872.964	1.396	18
19	961.538	943.171	1.531	924.805	907.264	1.462	889.723	872.971	1.396	19
20	961.538	943.172	1.531	924.806	907.267	1.462	889.727	872.978	1.396	20
21	961.538	943.173	1.530	924.808	907.270	1.462	889.733	872.986	1.396	21
22	961.538	943.174	1.530	924.810	907.274	1.461	889.738	872.994	1.395	22
23	961.538	943.175	1.530	924.812	907.278	1.461	889.744	873.003	1.395	23
24	961.538	943.176	1.530	924.814	907.282	1.461	889.751	873.013	1.395	24
25	961.538	943.177	1.530	924.816	907.287	1.461	889.758	873.024	1.395	25
26	961.538	943.178	1.530	924.819	907.292	1.461	889.766	873.037	1.394	26
27	961.538	943.180	1.530	924.822	907.299	1.460	889.775	873.049	1.394	27
28	961.538	943.181	1.530	924.825	907.305	1.460	889.785	873.064	1.393	28
29	961.538	943.184	1.530	924.829	907.312	1.460	889.796	873.082	1.393	29
30	961.538	943.185	1.530	924.833	907.320	1.459	889.808	873.099	1.392	30
31	961.538	943.188	1.529	924.838	907.329	1.459	889.821	873.118	1.392	31
32	961.538	943.190	1.529	924.842	907.339	1.459	889.835	873.139	1.391	32
33	961.538	943.192	1.529	924.847	907.349	1.458	889.851	873.163	1.391	33
34	961.538	943.196	1.529	924.853	907.361	1.458	889.868	873.190	1.390	34
35	961.538	943.199	1.528	924.860	907.374	1.457	889.888	873.219	1.389	35
36	961.538	943.202	1.528	924.867	907.388	1.457	889.908	873.249	1.388	36
37	961.538	943.206	1.528	924.874	907.402	1.456	889.931	873.283	1.387	37
38	961.538	943.210	1.527	924.883	907.420	1.455	889.957	873.322	1.386	38
39	961.538	943.215	1.527	924.892	907.438	1.455	889.985	873.364	1.385	39
40	961.538	943.220	1.527	924.902	907.458	1.454	890.015	873.410	1.384	40
41	961.538	943.225	1.526	924.913	907.480	1.453	890.048	873.460	1.382	41
42	961.538	943.232	1.526	924.926	907.506	1.452	890.086	873.516	1.381	42
43	961.538	943.239	1.525	924.939	907.532	1.451	890.126	873.576	1.379	43
44	961.538	943.246	1.524	924.954	907.562	1.449	890.171	873.644	1.377	44
45	961.538	943.254	1.524	924.971	907.595	1.448	890.220	873.717	1.375	45
46	961.538	943.263	1.523	924.989	907.631	1.447	890.274	873.798	1.373	46
47	961.538	943.273	1.522	925.008	907.670	1.445	890.333	873.887	1.371	47
48	961.538	943.284	1.521	925.030	907.714	1.443	890.399	873.985	1.368	48
49	961.538	943.296	1.520	925.054	907.762	1.441	890.470	874.091	1.365	49
50	961.538	943.309	1.519	925.080	907.814	1.439	890.549	874.210	1.362	50
51	961.538	943.323	1.518	925.109	907.872	1.436	890.635	874.338	1.358	51
52	961.538	943.339	1.517	925.141	907.935	1.434	890.730	874.480	1.354	52
53	961.538	943.357	1.515	925.176	908.004	1.431	890.833	874.635	1.350	53
54	961.538	943.376	1.514	925.214	908.080	1.428	890.947	874.805	1.345	54
55	961.538	943.397	1.512	925.256	908.164	1.424	891.073	874.994	1.340	55
56	961.538	943.420	1.511	925.302	908.256	1.421	891.211	875.199	1.334	56
57	961.538	943.446	1.508	925.354	908.359	1.416	891.363	875.425	1.328	57
58	961.538	943.473	1.505	925.409	908.469	1.412	891.528	875.670	1.322	58
59	961.538	943.504	1.503	925.470	908.589	1.407	891.709	875.940	1.314	59
60	961.538	943.537	1.500	925.537	908.722	1.401	891.908	876.237	1.306	60
61	961.538	943.575	1.497	925.611	908.868	1.395	892.126	876.560	1.297	61
62	961.538	943.615	1.494	925.692	909.028	1.389	892.365	876.915	1.288	62
63	961.538	943.659	1.490	925.781	909.204	1.381	892.627	877.303	1.277	63
64	961.538	943.708	1.486	925.878	909.396	1.374	892.914	877.728	1.266	64
65	961.538	943.761	1.481	925.985	909.606	1.365	893.228	878.192	1.253	65

FORMULA, $\Lambda_x^{(m)} = 1000 \left\{ \dfrac{M_x - M_{x+m} + D_{x+m}}{D_\varnothing} \right\} = 1000 \left\{ 1 - (1-v)\left(1 + a_\varnothing^{m-1}\right) \right\}$

TABLE LIV.

*123

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CON-
TINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	4.	4½.	½m.d.	5.	5½.	½m.d.	6.	6½.	½m.d.	PRESENT AGE.
15	856.191	840.184	1.334	824.177	808.889	1.274	793.602	779.002	1.217	15
16	856.196	840.191	1.334	824.187	808.902	1.274	793.617	779.020	1.216	16
17	856.203	840.201	1.334	824.199	808.917	1.274	793.635	779.041	1.216	17
18	856.211	840.211	1.333	824.212	808.933	1.273	793.654	779.064	1.216	18
19	856.220	840.223	1.333	824.226	808.950	1.273	793.675	779.090	1.215	19
20	856.229	840.235	1.333	824.241	808.970	1.273	793.699	779.118	1.215	20
21	856.239	840.248	1.333	824.258	808.991	1.272	793.724	779.149	1.215	21
22	856.250	840.263	1.332	824.277	809.014	1.272	793.752	779.182	1.214	22
23	856.262	840.279	1.332	824.297	809.039	1.272	793.782	779.218	1.214	23
24	856.276	840.297	1.332	824.319	809.068	1.271	793.816	779.259	1.213	24
25	856.290	840.317	1.331	824.344	809.099	1.270	793.853	779.303	1.213	25
26	856.307	840.339	1.331	824.372	809.133	1.270	793.894	779.353	1.212	26
27	856.324	840.363	1.330	824.401	809.170	1.269	793.939	779.407	1.211	27
28	856.344	840.389	1.330	824.434	809.211	1.269	793.989	779.467	1.210	28
29	856.367	840.419	1.329	824.471	809.258	1.268	794.044	779.533	1.209	29
30	856.390	840.450	1.328	824.510	809.306	1.267	794.102	779.603	1.208	30
31	856.416	840.485	1.328	824.553	809.360	1.266	794.168	779.682	1.207	31
32	856.444	840.522	1.327	824.601	809.420	1.265	794.240	779.769	1.206	32
33	856.476	840.566	1.326	824.655	809.488	1.264	794.320	779.864	1.205	33
34	856.512	840.612	1.325	824.713	809.560	1.263	794.408	779.970	1.203	34
35	856.559	840.663	1.324	824.777	809.640	1.261	794.504	780.085	1.202	35
36	856.591	840.718	1.323	824.846	809.726	1.260	794.607	780.209	1.200	36
37	856.636	840.779	1.321	824.922	809.822	1.258	794.722	780.348	1.198	37
38	856.688	840.848	1.320	825.008	809.929	1.257	794.850	780.501	1.196	38
39	856.744	840.922	1.319	825.101	810.045	1.255	794.990	780.669	1.193	39
40	856.805	841.004	1.317	825.203	810.173	1.253	795.143	780.853	1.191	40
41	856.872	841.093	1.315	825.314	810.312	1.250	795.310	781.054	1.188	41
42	856.947	841.193	1.313	825.439	810.468	1.248	795.497	781.278	1.185	42
43	857.027	841.300	1.311	825.573	810.635	1.245	795.698	781.519	1.182	43
44	857.117	841.419	1.308	825.722	810.822	1.242	795.922	781.788	1.178	44
45	857.215	841.550	1.305	825.886	811.026	1.238	796.167	782.081	1.174	45
46	857.322	841.693	1.302	826.065	811.250	1.235	796.435	782.403	1.169	46
47	857.441	841.851	1.299	826.262	811.496	1.231	796.730	782.757	1.164	47
48	857.571	842.025	1.296	826.478	811.766	1.226	797.054	783.144	1.159	48
49	857.713	842.214	1.292	826.715	812.061	1.221	797.408	783.568	1.153	49
50	857.871	842.423	1.287	826.976	812.386	1.216	797.797	784.034	1.147	50
51	858.042	842.651	1.283	827.260	812.741	1.210	798.223	784.544	1.140	51
52	858.230	842.901	1.277	827.572	813.130	1.204	798.688	785.101	1.132	52
53	858.437	843.176	1.272	827.915	813.557	1.197	799.199	785.712	1.124	53
54	858.664	843.477	1.266	828.291	814.025	1.189	799.759	786.381	1.115	54
55	858.914	843.809	1.259	828.704	814.539	1.180	800.374	787.115	1.105	55
56	859.187	844.171	1.251	829.155	815.099	1.171	801.044	787.915	1.094	56
57	859.487	844.568	1.243	829.650	815.714	1.161	801.779	788.791	1.082	57
58	859.813	845.001	1.234	830.189	816.383	1.151	802.578	789.743	1.070	58
59	860.172	845.475	1.225	830.779	817.116	1.139	803.453	790.784	1.056	59
60	860.566	845.996	1.214	831.426	817.917	1.126	804.409	791.921	1.041	60
61	860.995	846.563	1.203	832.132	818.791	1.112	805.450	793.158	1.024	61
62	861.465	847.183	1.190	832.901	819.742	1.097	806.584	794.504	1.007	62
63	861.980	847.862	1.177	833.744	820.783	1.080	807.823	795.972	.988	63
64	862.542	848.601	1.162	834.661	821.914	1.062	809.167	797.563	.967	64
65	863.157	849.409	1.146	835.661	823.145	1.043	810.629	799.290	.945	65

Note that ½ m. d. is $\frac{1}{24}$ of the difference of the integer or m columns, 4 — 5, etc.

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	m = 7.	7½.	½m.d.	8.	8½.	½m.d.	9.	9½.	½m.d.	PRESENT AGE.
15	764.402	750.459	1.162	736.516	723.201	1.110	709.886	697.171	1.060	15
16	764.423	750.483	1.162	736.544	723.233	1.109	709.923	697.213	1.059	16
17	764.448	750.512	1.161	736.577	723.272	1.109	709.966	697.262	1.059	17
18	764.475	750.544	1.161	736.614	723.313	1.108	710.013	697.314	1.058	18
19	764.505	750.579	1.161	736.653	723.358	1.108	710.063	697.371	1.058	19
20	764.537	750.617	1.160	736.697	723.408	1.107	710.120	697.435	1.057	20
21	764.573	750.659	1.160	736.745	723.463	1.107	710.181	697.504	1.056	21
22	764.612	750.704	1.159	736.797	723.523	1.106	710.249	697.581	1.056	22
23	764.654	750.754	1.158	736.854	723.588	1.106	710.323	697.664	1.055	23
24	764.702	750.810	1.158	736.918	723.661	1.105	710.405	697.757	1.054	24
25	764.754	750.870	1.157	736.987	723.741	1.104	710.495	697.858	1.053	25
26	764.812	750.938	1.156	737.065	723.830	1.103	710.595	697.971	1.052	26
27	764.875	751.012	1.155	737.149	723.926	1.102	710.703	698.093	1.051	27
28	764.945	751.093	1.154	737.242	724.032	1.101	710.823	698.228	1.050	28
29	765.022	751.183	1.153	737.345	724.150	1.100	710.956	698.378	1.048	29
30	765.104	751.280	1.152	737.456	724.277	1.098	711.099	698.539	1.047	30
31	765.197	751.388	1.151	737.579	724.418	1.097	711.257	698.718	1.045	31
32	765.297	751.505	1.149	737.713	724.572	1.095	711.431	698.913	1.043	32
33	765.409	751.636	1.148	737.863	724.743	1.093	711.624	699.131	1.041	33
34	765.532	751.779	1.146	738.027	724.931	1.091	711.835	699.368	1.039	34
35	765.667	751.937	1.144	738.207	725.137	1.089	712.067	699.629	1.037	35
36	765.812	752.107	1.142	738.402	725.360	1.087	712.318	699.913	1.034	36
37	765.974	752.295	1.140	738.617	725.606	1.084	712.596	700.226	1.031	37
38	766.153	752.505	1.137	738.857	725.880	1.081	712.904	700.572	1.028	38
39	766.349	752.733	1.135	739.118	726.179	1.078	713.241	700.951	1.024	39
40	766.564	752.984	1.132	739.404	726.506	1.075	713.609	701.366	1.020	40
41	766.798	753.257	1.128	739.717	726.864	1.071	714.012	701.820	1.016	41
42	767.059	753.562	1.125	740.065	727.261	1.067	714.458	702.322	1.011	42
43	767.341	753.891	1.121	740.441	727.692	1.062	714.943	702.868	1.006	43
44	767.654	754.256	1.117	740.858	728.168	1.058	715.478	703.469	1.001	44
45	767.996	754.655	1.112	741.314	728.689	1.052	716.064	704.127	.995	45
46	768.371	755.092	1.107	741.813	729.259	1.046	716.705	704.848	.988	46
47	768.783	755.572	1.101	742.362	729.885	1.040	717.408	705.638	.981	47
48	769.235	756.098	1.095	742.962	730.569	1.033	718.177	706.502	.973	48
49	769.729	756.674	1.088	743.619	731.319	1.025	719.019	707.447	.964	49
50	770.272	757.305	1.081	744.339	732.140	1.017	719.941	708.482	.955	50
51	770.865	757.995	1.073	745.126	733.037	1.007	720.948	709.611	.945	51
52	771.514	758.751	1.064	745.987	734.018	.997	722.049	710.845	.934	52
53	772.225	759.577	1.054	746.929	735.090	.987	723.251	712.192	.922	53
54	773.003	760.481	1.044	747.959	736.262	.975	724.565	713.663	.908	54
55	773.856	761.471	1.032	749.086	737.542	.962	725.999	715.267	.894	55
56	774.786	762.549	1.020	750.313	738.936	.948	727.560	717.012	.879	56
57	775.803	763.728	1.006	751.653	740.457	.933	729.261	718.912	.862	57
58	776.909	765.008	.992	753.108	742.108	.917	731.108	720.973	.845	58
59	778.116	766.406	.976	754.696	743.906	.899	733.117	723.212	.825	59
60	779.434	767.929	.959	756.424	745.862	.880	735.300	725.642	.805	60
61	780.867	769.583	.940	758.300	747.982	.860	737.665	728.272	.783	61
62	782.425	771.380	.920	760.335	750.280	.838	740.225	731.115	.759	62
63	784.121	773.332	.899	762.544	752.770	.815	742.996	734.188	.734	63
64	785.959	775.446	.876	764.933	755.458	.790	745.984	737.495	.707	64
65	787.952	777.733	.852	767.515	758.360	.763	749.205	741.054	.679	65

TABLE LIV.

*125

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CON-
TINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	10.	10½.	½m.d.	11.	11½.	½m.d.	12.	12½.	½m.d.	PRESENT AGE.
15	684.457	672.317	1.012	660.177	648.586	.966	636.995	625.929	.922	15
16	684.504	672.369	1.011	660.235	648.650	.965	637.065	626.006	.922	16
17	684.558	672.429	1.011	660.301	648.722	.965	637.144	626.092	.921	17
18	684.616	672.494	1.010	660.372	648.801	.964	637.231	626.187	.920	18
19	684.680	672.566	1.009	660.451	648.888	.964	637.326	626.291	.920	19
20	684.751	672.645	1.009	660.538	648.984	.963	637.430	626.405	.919	20
21	684.828	672.730	1.008	660.633	649.089	.962	637.545	626.530	.918	21
22	684.913	672.825	1.007	660.737	649.203	.961	637.670	626.667	.917	22
23	685.006	672.928	1.007	660.851	649.329	.960	637.808	626.818	.916	23
24	685.109	673.043	1.006	660.977	649.469	.959	637.960	626.985	.915	24
25	685.222	673.169	1.004	661.116	649.621	.958	638.127	627.167	.913	25
26	685.347	673.308	1.003	661.270	649.791	.957	638.312	627.370	.912	26
27	685.483	673.460	1.002	661.437	649.975	.955	638.514	627.590	.910	27
28	685.634	673.627	1.001	661.621	650.178	.954	638.736	627.834	.909	28
29	685.800	673.812	.999	661.825	650.403	.952	638.981	628.101	.907	29
30	685.979	674.012	.997	662.045	650.646	.950	639.247	628.392	.905	30
31	686.178	674.233	.995	662.289	650.915	.948	639.541	628.713	.902	31
32	686.396	674.476	.993	662.557	651.210	.946	639.863	629.065	.900	32
33	686.638	674.745	.991	662.852	651.535	.943	640.219	629.454	.897	33
34	686.902	675.039	.989	663.177	651.893	.940	640.609	629.880	.894	34
35	687.192	675.362	.986	663.532	652.284	.937	641.037	630.348	.891	35
36	687.508	675.713	.983	663.919	652.710	.934	641.502	630.857	.887	36
37	687.856	676.101	.980	664.346	653.181	.930	642.016	631.418	.883	37
38	688.241	676.529	.976	664.817	653.699	.927	642.582	632.036	.879	38
39	688.662	676.997	.972	665.332	654.267	.922	643.202	632.713	.874	39
40	689.123	677.510	.968	665.897	654.888	.917	643.880	633.453	.869	40
41	689.628	678.071	.963	666.514	655.568	.912	644.621	634.262	.863	41
42	690.186	678.691	.958	667.196	656.318	.907	645.440	635.155	.857	42
43	690.792	679.364	.952	667.937	657.133	.900	646.329	636.125	.850	43
44	691.461	680.107	.946	668.753	658.030	.894	647.308	637.192	.843	44
45	692.191	680.918	.939	669.645	659.011	.886	648.377	638.358	.835	45
46	692.991	681.806	.932	670.621	660.083	.878	649.546	639.631	.826	46
47	693.868	682.779	.924	671.690	661.258	.869	650.825	641.025	.817	47
48	694.827	683.843	.915	672.859	662.540	.860	652.222	642.546	.806	48
49	695.875	685.005	.906	674.135	663.941	.850	653.747	644.205	.795	49
50	697.023	686.276	.896	675.530	665.471	.838	655.413	646.017	.783	50
51	698.275	687.663	.884	677.052	667.139	.826	657.227	647.988	.770	51
52	699.641	689.176	.872	678.711	668.957	.813	659.203	650.134	.756	52
53	701.133	690.826	.859	680.519	670.936	.799	661.354	652.469	.740	53
54	702.761	692.625	.845	682.489	673.092	.783	663.695	655.008	.724	54
55	704.535	694.585	.829	684.635	675.437	.767	666.239	657.764	.706	55
56	706.464	696.713	.813	686.963	677.979	.749	668.996	660.749	.687	56
57	708.563	699.028	.795	689.493	680.739	.730	671.986	663.982	.667	57
58	710.838	701.533	.775	692.229	683.721	.709	675.214	667.469	.645	58
59	713.308	704.251	.755	695.194	686.949	.687	678.705	671.235	.623	59
60	715.985	707.193	.733	698.402	690.437	.664	682.472	675.294	.598	60
61	718.880	710.371	.709	701.862	694.193	.639	686.525	679.654	.573	61
62	722.006	713.797	.684	705.587	698.231	.613	690.876	684.328	.546	62
63	725.379	717.488	.658	709.596	702.570	.586	695.545	689.335	.518	63
64	729.007	721.450	.630	713.894	707.214	.557	700.535	694.676	.488	64
65	732.904	725.699	.600	718.495	712.176	.527	705.857	700.361	.458	65

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,900 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	m = 13.	13½.	½m.d.	14.	14½.	½m.d.	15.	15½.	½m.d.	PRESENT AGE.
15	614.863	604.299	.880	593.736	583.652	.840	573.569	563.944	.802	15
16	614.947	604.390	.880	593.834	583.758	.840	573.683	564.067	.801	16
17	615.040	604.492	.879	593.944	583.877	.839	573.810	564.204	.801	17
18	615.143	604.603	.878	594.064	584.007	.838	573.950	564.354	.800	18
19	615.256	604.726	.878	594.197	584.150	.837	574.104	564.520	.799	19
20	615.380	604.861	.877	594.342	584.307	.836	574.273	564.701	.798	20
21	615.516	605.009	.876	594.502	584.480	.835	574.458	564.900	.797	21
22	615.665	605.170	.875	594.676	584.668	.834	574.661	565.119	.795	22
23	615.829	605.349	.873	594.869	584.876	.833	574.884	565.358	.794	23
24	616.010	605.546	.872	595.081	585.105	.831	575.130	565.623	.792	24
25	616.208	605.761	.871	595.314	585.357	.830	575.400	565.913	.791	25
26	616.428	605.999	.869	595.571	585.634	.828	575.698	566.233	.789	26
27	616.667	606.259	.867	595.851	585.937	.826	576.023	566.582	.787	27
28	616.931	606.545	.866	596.160	586.271	.824	576.382	566.968	.785	28
29	617.222	606.861	.863	596.501	586.638	.822	576.776	567.392	.782	29
30	617.537	607.204	.861	596.871	587.038	.819	577.205	567.852	.779	30
31	617.886	607.582	.859	597.279	587.479	.817	577.679	568.361	.777	31
32	618.268	607.997	.856	597.727	587.962	.814	578.198	568.918	.773	32
33	618.690	608.455	.853	598.221	588.495	.811	578.769	569.532	.770	33
34	619.152	608.957	.850	598.762	589.079	.807	579.396	570.204	.766	34
35	619.659	609.507	.846	599.355	589.719	.803	580.083	570.941	.762	35
36	620.211	610.106	.842	600.002	590.416	.799	580.831	571.745	.757	36
37	620.820	610.767	.838	600.714	591.184	.794	581.655	572.629	.752	37
38	621.491	611.494	.833	601.498	592.029	.789	582.561	573.601	.747	38
39	622.224	612.289	.828	602.354	592.952	.784	583.551	574.662	.741	39
40	623.026	613.159	.822	603.292	593.963	.777	584.634	575.823	.734	40
41	623.904	614.110	.816	604.317	595.067	.771	585.818	577.092	.727	41
42	624.871	615.157	.810	605.444	596.281	.764	587.119	578.486	.719	42
43	625.922	616.296	.802	606.671	597.602	.756	588.534	580.002	.711	43
44	627.077	617.547	.794	608.017	599.051	.747	590.086	581.663	.702	44
45	628.339	618.913	.786	609.487	600.632	.738	591.778	583.474	.692	45
46	629.717	620.404	.776	611.092	602.358	.728	593.625	585.450	.681	46
47	631.225	622.035	.766	612.845	604.242	.717	595.640	587.604	.670	47
48	632.870	623.813	.755	614.756	606.295	.705	597.835	589.949	.657	48
49	634.664	625.751	.743	616.838	608.531	.692	600.224	592.501	.644	49
50	636.621	627.863	.730	619.106	610.964	.679	602.823	595.274	.629	50
51	638.750	630.161	.716	621.572	613.608	.664	605.645	598.283	.613	51
52	641.066	632.658	.701	624.251	616.479	.648	608.707	601.546	.597	52
53	643.585	635.372	.684	627.159	619.592	.631	612.025	605.078	.579	53
54	646.321	638.317	.667	630.313	622.966	.612	615.619	608.900	.560	54
55	649.290	641.510	.648	633.731	626.617	.593	619.504	613.028	.540	55
56	652.502	644.961	.628	637.421	630.556	.572	623.691	617.472	.518	56
57	655.978	648.692	.607	641.406	634.804	.550	628.203	622.254	.496	57
58	659.725	652.709	.585	645.692	639.368	.527	633.045	627.375	.473	58
59	663.766	657.034	.561	650.303	644.272	.503	638.242	632.873	.447	59
60	668.116	661.685	.536	655.254	649.529	.477	643.804	638.743	.422	60
61	672.783	666.667	.510	660.551	655.144	.451	649.737	644.995	.395	61
62	677.780	671.992	.482	666.205	661.128	.423	656.051	651.636	.368	32
63	683.125	677.678	.454	672.231	667.493	.395	662.756	658.675	.340	63
64	688.817	683.721	.425	678.626	674.236	.366	669.846	666.102	.312	64
65	694.866	690.131	.395	685.396	681.358	.337	677.321	673.917	.284	65

TABLE LIV. *127

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	16.	16½.	½m.d.	17.	17½.	½m.d.	18.	18½.	½m.d.	PRESENT AGE.
15	554.320	545.135	.765	535.951	527.186	.730	518.422	510.060	.697	15
16	554.452	545.276	.765	536.101	527.347	.730	518.593	510.241	.696	16
17	554.598	545.433	.764	536.268	527.525	.729	518.782	510.442	.695	17
18	554.759	545.605	.763	536.451	527.720	.728	518.989	510.662	.694	18
19	554.936	545.794	.762	536.653	527.934	.727	519.216	510.904	.693	19
20	555.130	546.002	.761	536.874	528.171	.725	519.469	511.172	.691	20
21	555.343	546.230	.759	537.117	528.430	.724	519.744	511.464	.690	21
22	555.576	546.480	.758	537.384	528.713	.723	520.043	511.782	.688	22
23	555.833	546.754	.757	537.676	529.027	.721	520.378	512.138	.687	23
24	556.116	547.057	.755	537.999	529.369	.719	520.740	512.523	.685	24
25	556.426	547.389	.753	538.352	529.746	.717	521.140	512.948	.683	25
26	556.768	547.755	.751	538.742	530.162	.715	521.583	513.419	.680	26
27	557.142	548.155	.749	539.168	530.616	.713	522.065	513.930	.678	27
28	557.554	548.595	.747	539.637	531.115	.710	522.594	514.492	.675	28
29	558.007	549.080	.744	540.153	531.666	.707	523.180	515.114	.672	29
30	558.499	549.606	.741	540.714	532.263	.704	523.813	515.787	.669	30
31	559.043	550.188	.738	541.333	532.922	.701	524.511	516.528	.665	31
32	559.639	550.826	.734	542.012	533.646	.697	525.280	517.345	.661	32
33	560.295	551.526	.731	542.758	534.440	.693	526.122	518.238	.657	33
34	561.013	552.294	.727	543.576	535.310	.689	527.045	519.217	.652	34
35	561.800	553.135	.722	544.471	536.264	.684	528.057	520.290	.647	35
36	562.659	554.053	.717	545.447	537.302	.679	529.157	521.457	.642	36
37	563.603	555.061	.712	546.520	538.445	.673	530.370	522.743	.636	37
38	564.641	556.169	.706	547.698	539.697	.667	531.697	524.149	.629	38
39	565.774	557.379	.700	548.985	541.066	.660	533.147	525.686	.622	39
40	567.013	558.702	.693	550.391	542.560	.653	534.730	527.363	.614	40
41	568.367	560.146	.685	551.926	544.192	.645	536.459	529.194	.605	41
42	569.854	561.732	.677	553.610	545.980	.636	538.351	531.196	.596	42
43	571.470	563.455	.668	555.441	547.925	.626	540.410	533.375	.586	43
44	573.241	565.343	.658	557.445	550.052	.616	542.658	535.752	.576	44
45	575.171	567.398	.648	559.626	552.366	.605	545.106	538.339	.564	45
46	577.275	569.639	.636	562.003	554.886	.593	547.770	541.153	.551	46
47	579.569	572.080	.624	564.591	557.628	.580	550.666	544.210	.538	47
48	582.064	574.733	.611	567.403	560.606	.566	553.808	547.525	.524	48
49	584.777	577.616	.597	570.456	563.837	.552	557.218	551.119	.508	49
50	587.726	580.748	.582	573.770	567.340	.536	560.911	555.009	.492	50
51	590.922	584.139	.565	577.357	571.131	.519	564.905	559.212	.474	51
52	594.385	587.811	.548	581.238	575.227	.501	569.217	563.745	.456	52
53	598.132	591.780	.529	585.429	579.647	.482	573.866	568.627	.437	53
54	602.182	596.066	.510	589.950	584.409	.462	578.868	573.874	.416	54
55	606.552	600.685	.489	594.818	589.532	.441	584.246	579.509	.395	55
56	611.253	605.648	.467	600.043	595.022	.418	590.001	585.530	.373	56
57	616.305	610.975	.444	605.646	600.900	.396	596.155	591.961	.350	57
58	621.705	616.661	.420	611.618	607.161	.371	602.704	598.793	.326	58
59	627.504	622.758	.396	618.012	613.849	.347	609.686	606.065	.302	59
60	633.682	629.243	.370	624.804	620.943	.322	617.083	613.757	.277	60
61	640.253	636.128	.344	632.004	628.452	.296	624.900	621.870	.252	61
62	647.221	643.417	.317	639.613	636.369	.270	633.126	630.391	.228	62
63	654.594	651.113	.290	647.633	644.699	.245	641.764	639.320	.204	63
64	662.359	659.203	.263	656.047	653.420	.219	650.794	648.635	.180	64
65	670.514	667.679	.236	664.845	662.518	.194	660.191	658.308	.157	65

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	$m=19.$	$19\frac{1}{2}.$	$\frac{1}{2}$m.d.	20.	$20\frac{1}{2}.$	$\frac{1}{2}$m.d.	21.	$21\frac{1}{2}.$	$\frac{1}{2}$m.d.	PRESENT AGE.
15	501.698	493.720	.665	485.743	478.134	.634	470.525	463.269	.605	15
16	501.890	493.924	.664	485.959	478.362	.633	470.766	463.523	.604	16
17	502.103	494.150	.663	486.197	478.614	.632	471.031	463.802	.602	17
18	502.336	494.397	.662	486.458	478.890	.631	471.322	464.109	.601	18
19	502.592	494.668	.660	486.745	479.193	.629	471.641	464.446	.600	19
20	502.876	494.969	.659	487.062	479.528	.628	471.995	464.818	.598	20
21	503.185	495.296	.657	487.408	479.894	.626	472.380	465.225	.596	21
22	503.522	495.654	.656	487.786	480.293	.624	472.801	465.668	.594	22
23	503.899	496.053	.654	488.207	480.738	.622	473.269	466.162	.592	23
24	504.307	496.485	.652	488.664	481.221	.620	473.778	466.698	.590	24
25	504.757	496.962	.650	489.167	481.752	.618	474.337	467.288	.587	25
26	505.255	497.489	.647	489.723	482.339	.615	474.956	467.939	.585	26
27	505.796	498.062	.645	490.328	482.978	.613	475.629	468.648	.582	27
28	506.391	498.692	.642	490.994	483.681	.609	476.369	469.428	.578	28
29	507.049	499.389	.638	491.729	484.457	.606	477.186	470.288	.575	29
30	507.761	500.142	.635	492.524	485.297	.602	478.070	471.219	.571	30
31	508.545	500.972	.631	493.399	486.221	.598	479.043	472.244	.567	31
32	509.409	501.887	.627	494.364	487.239	.594	480.114	473.371	.562	32
33	510.354	502.886	.622	495.418	488.351	.589	481.285	474.603	.557	33
34	511.389	503.981	.617	496.573	489.569	.584	482.566	475.952	.551	34
35	512.524	505.181	.612	497.838	490.903	.578	483.968	477.426	.545	35
36	513.758	506.486	.606	499.214	492.354	.572	485.494	479.031	.539	36
37	515.117	507.922	.600	500.728	493.949	.565	487.171	480.794	.531	37
38	516.602	509.491	.593	502.381	495.692	.557	489.002	482.718	.524	38
39	518.225	511.205	.585	504.186	497.592	.550	490.999	484.816	.515	39
40	519.997	513.076	.577	506.156	499.666	.541	493.177	487.102	.506	40
41	521.929	515.116	.568	508.303	501.926	.531	495.549	489.592	.496	41
42	524.042	517.345	.558	510.648	504.392	.521	498.137	492.307	.486	42
43	526.340	519.769	.548	513.197	507.072	.510	500.948	495.253	.475	43
44	528.847	522.410	.536	515.974	509.990	.499	504.006	498.458	.462	44
45	531.573	525.282	.524	518.991	513.158	.486	507.326	501.934	.449	45
46	534.536	528.401	.511	522.266	516.595	.473	510.924	505.699	.435	46
47	537.754	531.786	.497	525.819	520.321	.458	514.823	509.775	.421	47
48	541.242	535.453	.482	529.664	524.349	.443	519.035	514.176	.405	48
49	545.021	539.422	.467	533.824	528.704	.427	523.585	518.925	.388	49
50	549.107	543.710	.450	538.313	533.401	.409	528.488	524.037	.371	50
51	553.519	548.336	.432	543.153	538.458	.391	533.762	529.530	.353	51
52	558.273	553.315	.413	548.358	543.890	.372	539.423	535.420	.334	52
53	563.388	558.667	.393	553.947	549.717	.353	545.487	541.721	.314	53
54	568.881	564.407	.373	559.933	555.950	.332	551.968	548.447	.293	54
55	574.772	570.554	.352	566.337	562.609	.311	558.882	555.612	.273	55
56	581.060	577.108	.329	573.157	569.691	.289	566.225	563.210	.251	56
57	587.767	584.088	.307	580.410	577.210	.267	574.011	571.254	.230	57
58	594.883	591.482	.283	588.082	585.152	.244	582.222	579.723	.208	58
59	602.445	599.326	.260	596.207	593.547	.222	590.888	588.645	.187	59
60	610.431	607.595	.236	604.759	602.368	.199	599.977	597.986	.166	60
61	618.840	616.285	.213	613.731	611.604	.177	609.477	607.730	.146	61
62	627.657	625.380	.190	623.103	621.233	.156	619.363	617.850	.126	62
63	636.877	634.870	.167	632.864	631.241	.135	629.618	628.326	.108	63
64	646.477	644.731	.146	642.985	641.596	.116	640.207	639.121	.091	64
65	656.425	654.926	.125	653.428	652.257	.098	651.087	650.190	.075	65

TABLE LIV. *129

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	22.	22½.	½m d.	23.	23½.	½m.d.	24.	24½.	½m.d.	PRESENT AGE.
15	456.013	449.094	.577	442.176	435.581	.550	428.986	422.700	.524	15
16	456.280	449.375	.575	442.471	435.890	.548	429.310	423.040	.523	16
17	456.574	449.685	.574	442.796	436.232	.547	429.667	423.415	.521	17
18	456.897	450.024	.573	443.152	436.605	.546	430.059	423.825	.520	18
19	457.251	450.397	.571	443.543	437.016	.544	430.490	424.277	.518	19
20	457.642	450.808	.570	443.975	437.470	.542	430.965	424.775	.516	20
21	458.070	451.259	.568	444.447	437.965	.540	431.484	425.319	.514	21
22	458.536	451.749	.566	444.962	438.506	.538	432.050	425.912	.512	22
23	459.055	452.294	.563	445.534	439.107	.536	432.679	426.571	.509	23
24	459.618	452.887	.562	446.156	439.759	.533	433.363	427.288	.506	24
25	460.238	453.539	.558	446.840	440.477	.530	434.114	428.074	.503	25
26	460.923	454.259	.555	447.595	441.269	.527	434.943	428.943	.500	26
27	461.668	455.042	.552	448.417	442.131	.524	435.846	429.888	.497	27
28	462.487	455.903	.549	449.319	443.078	.520	436.837	430.926	.493	28
29	463.391	456.852	.545	450.314	444.121	.516	437.928	432.068	.488	29
30	464.369	457.880	.541	451.392	445.252	.512	439.112	433.307	.484	30
31	465.445	459.011	.536	452.577	446.494	.507	440.412	434.667	.479	31
32	466.628	460.253	.531	453.879	447.859	.502	441.838	436.158	.473	32
33	467.922	461.612	.526	455.302	449.349	.496	443.397	437.789	.467	33
34	469.337	463.097	.520	456.857	450.979	.490	445.100	439.569	.461	34
35	470.885	464.721	.514	458.558	452.759	.483	446.961	441.514	.454	35
36	472.569	466.488	.507	460.408	454.696	.476	448.984	443.628	.446	36
37	474.417	468.426	.499	462.436	456.818	.468	451.200	445.941	.438	37
38	476.434	470.540	.490	464.647	459.131	.460	453.615	448.462	.429	38
39	478.633	472.845	.482	467.057	461.651	.451	456.244	451.205	.420	39
40	481.028	475.354	.473	469.680	464.391	.441	459.103	454.186	.410	40
41	483.635	478.083	.463	472.531	467.369	.430	462.208	457.422	.399	41
42	486.477	481.056	.452	475.636	470.610	.419	465.584	460.938	.387	42
43	489.559	484.279	.440	479.000	474.120	.407	469.240	464.744	.375	43
44	492.910	487.781	.427	482.653	477.928	.394	473.202	468.864	.362	44
45	496.542	491.574	.414	486.607	482.046	.380	477.486	473.316	.348	45
46	500.474	495.677	.400	490.881	486.496	.365	482.110	478.117	.333	46
47	504.728	500.113	.385	495.498	491.296	.350	487.095	483.289	.317	47
48	509.317	504.893	.369	500.470	496.462	.334	492.454	488.842	.301	48
49	514.265	510.043	.352	505.821	502.016	.317	498.211	494.802	.284	49
50	519.586	515.575	.334	511.564	507.971	.299	504.377	501.178	.267	50
51	525.299	521.508	.316	517.717	514.342	.281	510.967	507.983	.249	51
52	531.418	527.854	.297	524.291	521.141	.263	517.992	515.229	.230	52
53	537.956	534.627	.277	531.299	528.380	.243	525.461	522.922	.212	53
54	544.927	541.839	.257	538.751	536.066	.224	533.380	531.066	.193	54
55	552.343	549.499	.237	546.656	544.206	.204	541.756	539.667	.174	55
56	560.196	557.599	.216	555.002	552.787	.185	550.573	548.706	.156	56
57	568.498	566.147	.196	563.797	561.815	.165	559.833	558.183	.138	57
58	577.225	575.118	.176	573.012	571.259	.146	569.505	568.065	.120	58
59	586.403	584.536	.156	582.669	581.135	.128	579.602	578.361	.103	59
60	595.995	594.360	.136	592.725	591.402	.110	590.079	589.027	.088	60
61	605.983	604.570	.118	603.157	602.033	.094	600.908	600.029	.073	61
62	616.337	615.133	.100	613.930	612.989	.078	612.049	611.329	.060	62
63	627.035	626.026	.084	625.017	624.245	.064	623.472	622.893	.048	63
64	638.036	637.205	.069	636.374	635.752	.052	635.129	634.674	.038	64
65	649.294	648.622	.056	647.951	647.461	.041	646.970	646.621	.029	65

TABLE LIV.

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE	$m=25$	$25\frac{1}{2}$	$\frac{1}{2}$m.d.	26.	$26\frac{1}{2}$	$\frac{1}{2}$m.d.	27	$27\frac{1}{2}$	$\frac{1}{2}$m.d.	PRESENT AGE
15	416.415	410.426	.499	404.437	398.732	.475	393.027	387.595	.453	15
16	416.770	410.798	.498	404.826	399.139	.474	393.451	388.037	.451	16
17	417.162	411.208	.496	405.254	399.586	.472	393.918	388.525	.449	17
18	417.592	411.658	.495	405.724	400.077	.471	394.431	389.059	.448	18
19	418.064	412.152	.493	406.240	400.617	.469	394.993	389.646	.446	19
20	418.585	412.697	.491	406.808	401.210	.467	395.612	390.292	.443	20
21	419.153	413.291	.489	407.430	401.859	.464	396.289	390.999	.441	21
22	419.775	413.942	.486	408.109	402.569	.462	397.029	391.770	.438	22
23	420.463	414.662	.483	408.860	403.353	.459	397.846	392.622	.435	23
24	421.212	415.445	.481	409.678	404.208	.456	398.738	393.553	.432	24
25	422.035	416.305	.478	410.576	405.146	.453	399.715	394.571	.429	25
26	422.942	417.254	.474	411.566	406.178	.449	400.791	395.693	.425	26
27	423.930	418.287	.470	412.644	407.304	.445	401.963	396.914	.421	27
28	425.015	419.421	.466	413.826	408.537	.441	403.249	398.254	.416	28
29	426.208	420.667	.462	415.126	409.894	.436	404.661	399.725	.411	29
30	427.502	422.019	.457	416.536	411.364	.431	406.192	401.319	.406	30
31	428.922	423.502	.452	418.083	412.977	.426	407.871	403.068	.400	31
32	430.479	425.129	.446	419.778	414.744	.420	409.710	404.981	.394	32
33	432.180	426.904	.440	421.628	416.672	.413	411.716	407.068	.387	33
34	434.038	428.842	.433	423.647	418.775	.406	413.903	409.342	.380	34
35	436.067	430.959	.426	425.851	421.069	.398	416.288	411.822	.372	35
36	438.272	433.258	.418	428.244	423.561	.390	418.878	414.513	.364	36
37	440.683	435.772	.409	430.860	426.282	.382	421.704	417.448	.355	37
38	443.310	438.507	.400	433.705	429.241	.372	424.776	420.636	.345	38
39	446.166	441.482	.390	436.797	432.453	.362	428.110	424.095	.335	39
40	449.269	444.710	.380	440.152	435.938	.351	431.724	427.842	.324	40
41	452.636	448.212	.369	443.788	439.712	.340	435.636	431.894	.312	41
42	456.293	452.013	.357	447.732	443.803	.327	439.874	436.281	.299	42
43	460.247	456.119	.344	451.991	448.217	.315	444.443	441.007	.286	43
44	464.527	460.560	.331	456.594	452.983	.301	449.372	446.101	.273	44
45	469.146	465.350	.316	461.554	458.115	.287	454.676	451.577	.258	45
46	474.124	470.507	.301	466.890	463.630	.272	460.370	457.449	.243	46
47	479.482	476.052	.286	472.621	469.548	.256	466.474	463.738	.228	47
48	485.231	481.995	.270	478.759	475.878	.240	472.998	470.452	.212	48
49	491.393	488.358	.253	485.323	482.641	.224	479.958	477.605	.196	49
50	497.978	495.150	.236	492.322	489.841	.207	487.361	485.204	.180	50
51	505.000	502.383	.218	499.766	497.491	.190	495.215	493.254	.163	51
52	512.466	510.063	.200	507.661	505.590	.173	503.520	501.755	.147	52
53	520.383	518.196	.182	516.008	514.143	.155	512.277	510.704	.131	53
54	528.752	526.779	.164	524.806	523.143	.139	521.480	520.095	.115	54
55	537.578	535.817	.147	534.056	532.589	.122	531.123	529.919	.100	55
56	546.839	545.284	.130	543.730	542.454	.106	541.177	540.144	.086	56
57	556.533	555.178	.113	553.823	552.726	.091	551.630	550.758	.073	57
58	566.624	565.459	.097	564.293	563.366	.077	562.439	561.714	.060	58
59	577.121	576.134	.082	575.147	574.376	.064	573.605	573.015	.049	59
60	587.974	587.152	.069	586.330	585.701	.052	585.071	584.599	.039	60
61	599.151	598.478	.056	597.806	597.302	.042	596.798	596.429	.031	61
62	610.609	610.069	.045	609.530	609.135	.033	608.741	608.460	.023	62
63	622.314	621.891	.035	621.468	621.167	.025	620.865	620.661	.017	63
64	634.219	633.895	.027	633.571	633.350	.018	633.130	632.987	.012	64
65	646.271	646.033	.020	645.795	645.642	.013	645.488	645.394	.008	65

TABLE LIV. *131

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1.000 CONTINUING m YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	28	28½	½m.d.	29.	29½	½m.d.	30	30½	½m.d.	PRESENT AGE.
15	382.162	376.991	.431	371.820	366.899	.410	361.978	357.297	.390	15
16	382.624	377.472	.429	372.320	367.420	.408	362.520	357.861	.388	16
17	383.131	378.001	.428	372.871	367.993	.407	363.116	358.480	.386	17
18	383.688	378.582	.426	373.475	368.622	.404	363.769	359.160	.384	18
19	384.299	379.218	.423	374.137	369.312	.402	364.486	359.905	.382	19
20	384.972	379.919	.421	374.867	370.071	.400	365.275	360.725	.379	20
21	385.708	380.686	.419	375.664	370.900	.397	366.136	361.621	.376	21
22	386.511	381.523	.416	376.535	371.806	.394	367.078	362.599	.373	22
23	387.399	382.448	.413	377.496	372.806	.391	368.116	363.678	.370	23
24	388.367	383.455	.409	378.544	373.896	.387	369.248	364.854	.366	24
25	389.427	384.559	.406	379.692	375.090	.384	370.488	366.141	.362	25
26	390.595	385.775	.402	380.955	376.403	.379	371.850	367.556	.358	26
27	391.866	387.097	.397	382.329	377.831	.375	373.333	369.095	.353	27
28	393.259	388.547	.393	383.835	379.396	.370	374.957	370.780	.348	28
29	394.788	390.137	.388	385.486	381.111	.365	376.736	372.625	.343	29
30	396.447	391.863	.382	387.278	382.972	.359	378.666	374.628	.337	30
31	398.264	393.751	.376	389.239	385.007	.353	380.776	376.815	.330	31
32	400.252	395.818	.370	391.383	387.232	.346	383.081	379.203	.323	32
33	402.420	398.069	.363	393.719	389.655	.339	385.591	381.804	.316	33
34	404.782	400.522	.355	396.262	392.292	.331	388.321	384.630	.308	34
35	407.356	403.194	.347	399.031	395.161	.323	391.291	387.702	.299	35
36	410.148	406.089	.338	402.031	398.268	.313	394.506	391.028	.290	36
37	413.191	409.245	.329	405.299	401.651	.304	398.003	394.642	.280	37
38	416.497	412.670	.319	408.843	405.318	.294	401.792	398.556	.270	38
39	420.080	416.381	.308	412.681	409.285	.283	405.889	402.784	.259	39
40	423.959	420.395	.297	416.831	413.572	.272	410.313	407.346	.247	40
41	428.153	424.731	.285	421.310	418.195	.260	415.081	412.259	.235	41
42	432.688	429.417	.273	426.146	423.183	.247	420.220	417.549	.223	42
43	437.571	434.458	.259	431.345	428.539	.234	425.734	423.221	.209	43
44	442.830	439.882	.246	436.934	434.292	.220	431.651	429.300	.196	44
45	448.477	445.700	.231	442.923	440.451	.206	437.979	435.794	.182	45
46	454.529	451.929	.217	449.329	447.031	.192	444.732	442.716	.168	46
47	461.002	458.584	.202	456.166	454.045	.177	451.923	450.078	.154	47
48	467.905	465.672	.186	463.438	461.496	.162	459.553	457.879	.140	48
49	475.252	473.206	.171	471.160	469.397	.147	467.634	466.130	.125	49
50	483.047	481.188	.155	479.330	477.745	.132	476.160	474.824	.111	50
51	491.293	489.622	.139	487.950	486.540	.118	485.131	483.957	.098	51
52	499.990	498.502	.124	497.014	495.775	.103	494.535	493.518	.085	52
53	509.132	507.822	.109	506.513	505.437	.090	504.362	503.492	.073	53
54	518.710	517.573	.095	516.435	515.515	.077	514.594	513.862	.061	54
55	528.714	527.740	.081	526.766	525.990	.065	525.215	524.609	.051	55
56	539.111	538.289	.069	537.468	536.826	.054	536.184	535.692	.041	56
57	549.886	549.205	.057	548.523	548.001	.044	547.479	547.088	.033	57
58	560.990	560.435	.046	559.881	559.466	.035	559.050	558.747	.025	58
59	572.424	571.982	.037	571.540	571.216	.027	570.893	570.663	.019	59
60	584.127	583.783	.029	583.438	583.193	.020	582.947	582.780	.014	60
61	596.061	595.799	.022	595.537	595.358	.015	595.180	595.065	.010	61
62	608.179	607.988	.016	607.798	607.675	.010	607.551	607.475	.006	62
63	620.456	620.324	.011	620.191	620.109	.007	620.028	619.980	.004	63
64	632.845	632.757	.007	632.670	632.619	.004	632.567	632.538	.002	64
65	645.299	645.244	.005	645.188	645.157	.003	645.126	645.110	.001	65

TABLE LIV.

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	m=31.	31½.	½m.d.	32.	32½.	½m.d.	33.	33½.	½m.d.	PRESENT AGE.
15	352.616	348.166	.371	343.716	339.487	.352	335.258	331.241	.335	15
16	353.202	348.774	.369	344.347	340.142	.350	335.937	331.945	.333	16
17	353.845	349.443	.367	345.041	340.862	.348	336.683	332.719	.330	17
18	354.551	350.176	.365	345.801	341.651	.346	337.501	333.567	.328	18
19	355.324	350.979	.362	346.634	342.515	.343	338.396	334.495	.325	19
20	356.175	351.863	.359	347.550	343.465	.340	339.381	335.516	.322	20
21	357.105	352.828	.356	348.551	344.504	.337	340.456	336.629	.319	21
22	358.121	353.882	.353	349.644	345.637	.334	341.630	337.846	.315	22
23	359.240	355.044	.350	350.848	346.885	.330	342.922	339.183	.312	23
24	360.459	356.309	.346	352.159	348.244	.326	344.329	340.641	.307	24
25	361.795	357.695	.342	353.594	349.730	.322	345.866	342.233	.303	25
26	363.261	359.215	.337	355.169	351.363	.317	347.557	343.981	.298	26
27	364.857	360.870	.332	356.883	353.138	.312	349.393	345.880	.293	27
28	366.603	362.680	.327	358.757	355.077	.307	351.398	347.955	.287	28
29	368.515	364.660	.321	360.806	357.199	.301	353.591	350.221	.281	29
30	370.589	366.809	.315	363.029	359.498	.294	355.967	352.676	.274	30
31	372.854	369.154	.308	365.454	362.006	.287	358.558	355.352	.267	31
32	375.326	371.713	.301	368.099	364.739	.280	361.379	358.264	.260	32
33	378.016	374.494	.294	370.973	367.708	.272	364.443	361.425	.252	33
34	380.939	377.517	.285	374.094	370.930	.264	367.766	364.851	.243	34
35	384.114	380.797	.276	377.481	374.425	.255	371.369	368.564	.234	35
36	387.550	384.345	.267	381.141	378.199	.245	375.257	372.567	.224	36
37	391.281	388.196	.257	385.111	382.290	.235	379.469	376.901	214	37
38	395.319	392.359	.247	389.400	386.706	.225	384.012	381.571	.203	38
39	399.679	396.852	.236	394.025	391.464	.213	388.903	386.595	.192	39
40	404.379	401.691	.224	399.003	396.581	.202	394.159	391.988	.181	40
41	409.437	406.894	.212	404.351	402.072	.190	399.794	397.766	.169	41
42	414.879	412.487	.199	410.094	407.964	.178	405.834	403.951	.157	42
43	420.707	418.469	.187	416.232	414.255	.165	412.277	410.542	.145	43
44	426.949	424.871	.173	422.792	420.969	.152	419.146	417.560	.132	44
45	433.609	431.692	.160	429.776	428.109	.139	426.442	425.006	.120	45
46	440.701	438.866	.146	437.194	435.683	.126	434.173	432.885	.107	46
47	448.233	446.643	.133	445.054	443.699	.113	442.344	441.201	.095	47
48	456.206	454.779	.119	453.352	452.149	.100	450.946	449.945	.083	48
49	464.627	463.359	.106	462.092	461.037	.088	459.981	459.114	.072	49
50	473.488	472.375	.093	471.263	470.349	.076	469.435	468.696	.062	50
51	482.783	481.819	.080	480.855	480.075	.065	479.296	478.675	.052	51
52	492.500	491.677	.069	490.853	490.198	.055	489.543	489.031	.043	52
53	502.622	501.930	.058	501.238	500.697	.045	500.156	499.742	.035	53
54	513.130	512.558	.048	511.986	511.548	.037	511.110	510.782	.027	54
55	524.004	523.540	.039	523.076	522.729	.029	522.381	522.127	.021	55
56	535.200	534.832	.031	534.464	534.194	.023	533.925	533.734	.016	56
57	546.697	546.411	.024	546.126	545.922	.017	545.719	545.580	.012	57
58	558.443	558.227	.018	558.010	557.863	.012	557.716	557.621	.008	58
59	570.433	570.276	.013	570.119	570.018	.008	569.917	569.855	.005	59
60	582.613	582.505	.009	582.397	582.330	.006	582.264	582.225	.003	60
61	594.950	594.879	.006	594.808	594.766	.004	594.724	594.701	.002	61
62	607.399	607.354	.004	607.309	607.285	.002	607.260	607.247	.001	62
63	619.932	619.905	.002	619.879	619.865	.001	619.851	619.844	.001	63
64	632.510	632.495	.001	632.480	632.473	.001	632.466	632.463	.000	64
65	645.094	645.087	.001	645.079	645.076	.000	645.073	645.072	.000	65

TABLE LIV.

*133

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CONTINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	34.	34½.	½m.d.	35.	35½.	½m.d.	36.	36½.	½m.d.	PRESENT AGE.
15	327.224	323.411	.318	319.599	315.983	.301	312.366	308.937	.286	15
16	327.953	324.167	.316	320.381	316.791	.299	313.202	309.803	.283	16
17	328.755	324.997	.313	321.240	317.681	.297	314.122	310.754	.281	17
18	329.633	325.906	.311	322.180	318.654	.294	315.128	311.794	.278	18
19	330.594	326.902	.308	323.210	319.719	.291	316.229	312.932	.275	19
20	331.650	327.995	.305	324.340	320.888	.288	317.437	314.181	.271	20
21	332.803	329.189	.301	325.574	322.165	.284	318.756	315.544	.268	21
22	334.061	330.491	.298	326.922	323.559	.280	320.195	317.031	.264	22
23	335.445	331.923	.294	328.401	325.087	.276	321.774	318.661	.259	23
24	336.952	333.482	.289	330.012	326.753	.272	323.493	320.436	.255	24
25	338.600	335.186	.285	331.772	328.570	.267	325.369	322.372	.250	25
26	340.405	337.052	.279	333.699	330.561	.262	327.422	324.490	.244	26
27	342.368	339.081	.274	335.793	332.722	.256	329.651	326.789	.239	27
28	344.511	341.294	.268	338.077	335.078	.250	332.080	329.293	.232	28
29	346.851	343.710	.262	340.569	337.649	.243	334.728	332.021	.226	29
30	349.385	346.325	.255	343.266	340.429	.236	337.592	334.969	.219	30
31	352.146	349.174	.248	346.201	343.453	.229	340.705	338.174	.211	31
32	355.149	352.269	.240	349.390	346.737	.221	344.084	341.648	.203	32
33	358.407	355.626	.232	352.845	350.292	.213	347.740	345.406	.195	33
34	361.937	359.261	.223	356.585	354.138	.204	351.691	349.464	.186	34
35	365.758	363.192	.214	360.627	358.292	.195	355.957	353.842	.176	35
36	369.878	367.429	.204	364.980	362.762	.185	360.543	358.544	.167	36
37	374.332	372.005	.194	369.678	367.581	.175	365.485	363.606	.157	37
38	379.130	376.931	.183	374.731	372.761	.164	370.790	369.035	.146	38
39	384.287	382.219	.172	380.152	378.311	.153	376.470	374.843	.136	39
40	389.818	387.886	.161	385.954	384.246	.142	382.539	381.041	.125	40
41	395.738	393.945	.149	392.152	390.579	.131	389.007	387.639	.114	41
42	402.068	400.417	.138	398.765	397.329	.120	395.893	394.656	.103	42
43	408.807	407.298	.126	405.790	404.490	.108	403.190	402.081	.092	43
44	415.974	414.608	.114	413.242	412.077	.097	410.913	409.931	.082	44
45	423.570	422.346	.102	421.121	420.089	.086	419.056	418.197	.072	45
46	431.597	430.511	.091	429.426	428.521	.075	427.617	426.874	.062	46
47	440.058	439.107	.079	438.155	437.374	.065	436.592	435.960	.053	47
48	448.943	448.120	.069	447.297	446.631	.056	445.966	445.437	.044	48
49	458.248	457.547	.058	456.845	456.288	.046	455.730	455.294	.036	49
50	467.957	467.369	.049	466.781	466.321	.038	465.862	465.510	.029	50
51	478.055	477.570	.040	477.085	476.714	.031	476.343	476.065	.023	51
52	488.520	488.128	.033	487.736	487.443	.024	487.149	486.934	.018	52
53	499.328	499.017	.026	498.707	498.480	.019	498.254	498.092	.014	53
54	510.454	510.214	.020	509.974	509.803	.014	509.632	509.516	.010	54
55	521.873	521.693	.015	521.512	521.389	.010	521.266	521.187	.007	55
56	533.542	533.411	.011	533.281	533.197	.007	533.113	533.061	.004	56
57	545.442	545.353	.007	545.263	545.208	.005	545.153	545.120	.003	57
58	557.526	557.479	.004	557.433	557.399	.003	557.364	557.345	.002	58
59	569.792	569.756	.003	569.719	569.699	.002	569.679	569.669	.001	59
60	582.186	582.164	.002	582.143	582.132	.001	582.121	582.115	.001	60
61	594.678	594.666	.001	594.654	594.648	.001	594.643	594.641	.000	61
62	607.234	607.228	.001	607.222	607.219	.000	607.217	607.216	.000	62
63	619.838	619.836	.000	619.833	619.831	.000	619.830	619.830	.000	63
64	632.460	632.459	.000	632.458	632.458	.000				64
65	645.070	645.069	.000							65

TABLE LIV.

SINGLE PREMIUM OR RESERVE (A), FOR ENDOWMENT INSURANCE OF 1,000 CON-TINUING *m* YEARS FROM THE PRESENT AGE.

4 PER CENT.

PRESENT AGE.	m = 37.	37½.	½m.d.	38.	38½.	½m.d.	39.	39½.	½m.d.	PRESENT AGE.
15	305.509	302.261	.271	299.014	295.941	.256	292.869	289.963	.242	15
16	306.403	303.186	.268	299.969	296.928	.253	293.886	291.014	.239	16
17	307.386	304.202	.265	301.017	298.010	.251	295.003	292.166	.236	17
18	308.460	305.311	.262	302.163	299.193	.248	296.223	293.425	.233	18
19	309.636	306.527	.259	303.417	300.487	.244	297.557	294.800	.230	19
20	310.925	307.857	.256	304.790	301.904	.241	299.018	296.307	.226	20
21	312.332	309.310	.252	306.288	303.449	.237	300.611	297.949	.222	21
22	313.866	310.894	.248	307.921	305.134	.232	302.346	299.737	.217	22
23	315.548	312.629	.243	309.710	306.978	.228	304.246	301.694	.213	23
24	317.379	314.517	.239	311.656	308.983	.223	306.311	303.820	.208	24
25	319.376	316.577	.233	313.777	311.168	.217	308.559	306.133	.202	25
26	321.558	318.825	.228	316.093	313.553	.212	311.012	308.657	.196	26
27	323.927	321.266	.222	318.605	316.137	.206	313.670	311.389	.190	27
28	326.506	323.922	.215	321.337	318.948	.199	316.559	314.358	.183	28
29	329.313	326.810	.209	324.307	322.001	.192	319.695	317.578	.176	29
30	332.347	329.931	.201	327.515	325.297	.185	323.079	321.051	.169	30
31	335.642	333.318	.194	330.994	328.869	.177	326.744	324.809	.161	31
32	339.213	336.986	.186	334.759	332.732	.169	330.704	328.867	.153	32
33	343.072	340.947	.177	338.822	336.897	.160	334.972	333.237	.145	33
34	347.237	345.219	.168	343.201	341.382	.152	339.564	337.935	.136	34
35	351.726	349.819	.159	347.913	346.205	.142	344.496	342.975	.127	35
36	356.545	354.754	.149	352.962	351.367	.133	349.773	348.364	.117	36
37	361.727	360.055	.139	358.383	356.905	.123	355.426	354.129	.108	37
38	367.281	365.730	.129	364.179	362.819	.113	361.459	360.276	.099	38
39	373.215	371.788	.119	370.361	369.119	.104	367.878	366.809	.089	39
40	379.543	378.240	.109	376.937	375.815	.094	374.693	373.736	.080	40
41	386.272	385.093	.098	383.915	382.911	.084	381.906	381.058	.071	41
42	393.418	392.363	.088	391.308	390.418	.074	389.529	388.788	.062	42
43	400.973	400.039	.078	399.104	398.326	.065	397.548	396.909	.053	43
44	408.949	408.131	.068	407.313	406.642	.056	405.970	405.427	.045	44
45	417.337	416.631	.059	415.925	415.353	.048	414.782	414.328	.038	45
46	426.132	425.531	.050	424.931	424.453	.040	423.975	423.601	.031	46
47	435.328	434.825	.042	434.322	433.929	.033	433.536	433.235	.025	47
48	444.907	444.493	.035	444.079	443.763	.026	443.446	443.209	.020	48
49	454.858	454.524	.028	454.190	453.940	.021	453.690	453.507	.015	49
50	465.158	464.895	.022	464.631	464.438	.016	464.245	464.108	.011	50
51	475.787	475.583	.017	475.380	475.235	.012	475.091	474.993	.008	51
52	486.719	486.567	.013	486.414	486.310	.009	486.206	486.139	.006	52
53	497.931	497.821	.009	497.711	497.640	.006	497.569	497.525	.004	53
54	509.400	509.325	.006	509.250	509.204	.004	509.157	509.130	.002	54
55	521.107	521.058	.004	521.009	520.980	.002	520.951	520.936	.001	55
56	533.009	532.978	.003	532.948	532.931	.001	532.914	532.905	.001	56
57	545.088	545.071	.001	545.053	545.043	.001	545.034	545.029	.000	57
58	557.326	557.316	.001	557.306	557.302	.000	557.297	557.295	.000	58
59	569.658	569.653	.000	569.648	569.645	.000	569.643	569.643	.000	59
60	582.110	582.107	.000	582.105	582.104	.000	582.103	582.103	.000	60
61	594.638	594.637	.000	594.636	594.636	.000				61
62	607.215	607.215	.000							62

TABLE LV.

CONTINUED ANNUAL PREMIUM (P), ALSO $\lambda\,(P - \pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 30.			D or 40.			D or 45.		
AGE. x.	P.	$\lambda\,(P - \pi)$.	AGE. x.	P.	$\lambda\,(P - \pi)$.	AGE. x.	P.	$\lambda\,(P - \pi)$.
10	36.209	1.422188	10	21.626	1.073792	27	42.013	1.440353
11	38.628	1.457505	11	22.610	1.102321	28	45.085	1.480236
12	41.333	1.494033	12	23.674	1.131372	29	48.557	1.521718
13	44.374	1.531914	13	24.828	1.160996	30	52.508	1.565008
14	47.814	1.571314	14	26.080	1.191238	31	57.043	1.610358
15	51.732	1.612430	15	27.444	1.222149	32	62.294	1.658046
16	56.232	1.655497	16	28.933	1.253772	33	68.441	1.708448
17	61.449	1.700814	17	30.564	1.286187	34	75.728	1.762024
18	67.560	1.748737	18	32.357	1.319456	35	84.494	1.819347
19	74.811	1.799719	19	34.333	1.353668	36	95.233	1.881195
20	83.542	1.854341	20	36.521	1.388905	37	108.685	1.948607
21	94.247	1.913374	21	38.955	1.425278	38	126.012	2.023045
22	107.667	1.977848	22	41.674	1.462912	39	149.147	2.106622
23	124.964	2.049214	23	44.730	1.501943	40	181.574	2.202634
24	148.078	2.129593	24	48.186	1.542552	41	230.259	2.316583
25	180.498	2.222272	25	52.122	1.584929	42	311.463	2.458789
26	229.202	2.332749	26	56.639	1.629316	43	473.944	2.652376
27	310.474	2.471330	27	61.873	1.676005			
28	473.167	2.661148	28	68.002	1.725368	**D or 50.**		
			29	75.271	1.777851			
D or 35.			30	84.019	1.834038	10	15.173	0.732305
			31	94.742	1.894707	11	15.680	0.757859
			32	108.178	1.960887	12	16.219	0.783718
10	27.291	1.243468	33	125.490	2.034036	13	16.795	0.809903
11	28.773	1.274618	34	148.615	2.116277	14	17.410	0.836438
12	30.397	1.306530	35	181.039	2.210894	15	18.066	0.863341
13	32.181	1.339279	36	229.732	2.323388	16	18.769	0.890617
14	34.150	1.372945	37	310.967	2.464075	17	19.522	0.918329
15	36.329	1.407614	38	473.559	2.656095	18	20.330	0.946482
16	38.753	1.443390				19	21.199	0.975105
17	41.464	1.480401	**D or 45.**			20	22.134	1.004235
18	44.510	1.518786				21	23.142	1.033906
19	47.956	1.558715	10	17.819	0.905510	22	24.232	1.064158
20	51.882	1.600380	11	18.510	0.932276	23	25.412	1.095030
21	56.388	1.644025	12	19.250	0.959437	24	26.692	1.126579
22	61.611	1.689944	13	20.045	0.987018	25	28.085	1.158863
23	67.730	1.738495	14	20.901	1.015049	26	29.605	1.191915
24	74.987	1.790134	15	21.821	1.043559	27	31.268	1.225823
25	83.725	1.845446	16	22.814	1.072577	28	33.093	1.260654
26	94.437	1.905194	17	23.888	1.102152	29	35.105	1.296492
27	107.863	1.970416	18	25.052	1.132321	30	37.328	1.333431
28	125.166	2.042566	19	26.315	1.163126	31	39.799	1.371589
29	148.285	2.123761	20	27.690	1.194622	32	42.558	1.411076
30	180.704	2.217287	21	29.191	1.226870	33	45.655	1.452050
31	229.405	2.328653	22	30.834	1.259935	34	49.153	1.494684
32	310.663	2.468160	23	32.639	1.293878	35	53.132	1.539172
33	473.316	2.658944	24	34.628	1.328793	36	57.693	1.585758
			25	36.830	1.364772	37	62.972	1.634744
			26	39.279	1.401919	38	69.148	1.686510

FORMULA, $P_x^m = 1000\,\dfrac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+m}} = 1000\left\{\dfrac{1}{1 + a_x^{m-1}} - (1-v)\right\}$; $\pi_x = \dfrac{1000 M_x}{N_x}$.

TABLE LV.

CONTINUED ANNUAL PREMIUM (P), ALSO λ (P — π), FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 50.			**D or 55.**			**D or 60.**		
AGE. x.	P.	λ (P — π).	AGE. x.	P.	λ (P — π).	AGE. x.	P.	λ (P — π).
39	76.463	1.741492	46	97.304	1.840747	48	72.131	1.619831
40	85.258	1.800288	47	110.824	1.911844	49	79.567	1.679106
41	96.025	1.863669	48	128.208	1.990107	50	88.483	1.742373
42	109.504	1.932686	49	151.386	2.077669	51	99.369	1.810412
43	126.851	2.008777	50	183.827	2.177823	52	112.954	1.884252
44	150.003	2.094087	51	232.476	2.296083	53	130.395	1.965369
45	182.437	2.191901	52	313.525	2.442754	54	153.615	2.055898
46	231.108	2.307724	53	475.564	2.640983	55	186.071	2.159133
47	312.252	2.451875				56	234.677	2.280580
48	474.564	2.647485	**D or 60.**			57	315.575	2.430562
						58	477.171	2.632212
D or 55.			10	11.984	0.344432			
			11	12.290	0.368547	**D or 65.**		
10	13.304	0.547799	12	12.613	0.392838			
11	13.690	0.572500	13	12.954	0.417355	10	11.069	0.112203
12	14.100	0.597443	14	13.316	0.442119	11	11.321	0.135832
13	14.534	0.622659	15	13.698	0.467164	12	11.586	0.159718
14	14.996	0.648155	16	14.103	0.492439	13	11.867	0.183754
15	15.486	0.673960	17	14.533	0.518014	14	12.163	0.208038
16	16.008	0.700054	18	14.988	0.543869	15	12.474	0.232590
17	16.563	0.726491	19	15.472	0.570029	16	12.804	0.257270
18	17.156	0.753284	20	15.985	0.596509	17	13.152	0.282237
19	17.788	0.780440	21	16.532	0.623363	18	13.520	0.307475
20	18.463	0.807995	22	17.113	0.650570	19	13.909	0.332963
21	19.185	0.835969	23	17.732	0.678154	20	14.320	0.358715
22	19.958	0.864398	24	18.392	0.706146	21	14.756	0.384801
23	20.787	0.893296	25	19.096	0.734600	22	15.217	0.411199
24	21.678	0.922710	26	19.849	0.763488	23	15.706	0.437893
25	22.636	0.952662	27	20.655	0.792868	24	16.225	0.464966
26	23.669	0.983189	28	21.518	0.822782	25	16.776	0.492453
27	24.783	1.014332	29	22.445	0.853236	26	17.362	0.520248
28	25.990	1.046160	30	23.440	0.884274	27	17.984	0.548488
29	27.299	1.078678	31	24.512	0.915959	28	18.646	0.577170
30	28.720	1.111975	32	25.668	0.948305	29	19.352	0.606274
31	30.271	1.146109	33	26.918	0.981366	30	20.103	0.635896
32	31.965	1.181126	34	28.271	1.015213	31	20.906	0.666059
33	33.824	1.217123	35	29.741	1.049865	32	21.764	0.696715
34	35.870	1.254188	36	31.340	1.085416	33	22.683	0.727972
35	38.130	1.292396	37	33.086	1.121911	34	23.668	0.759872
36	40.638	1.331870	38	34.999	1.159474	35	24.724	0.792378
37	43.436	1.372737	39	37.101	1.198149	36	25.859	0.825595
38	46.574	1.415162	40	39.420	1.238041	37	27.082	0.859529
39	50.113	1.459295	41	41.990	1.279284	38	28.402	0.894311
40	54.135	1.505350	42	44.852	1.322000	39	29.829	0.929894
41	58.741	1.553575	43	48.055	1.366328	40	31.376	0.966381
42	64.067	1.604276	44	51.663	1.412456	41	33.056	1.003848
43	70.288	1.657804	45	55.756	1.460599	42	34.888	1.042375
44	77.650	1.714635	46	60.435	1.510991	43	36.888	1.082002
45	86.492	1.775362	47	65.834	1.563945	44	39.083	1.122855

TABLE LV.

CONTINUED ANNUAL PREMIUM (P), ALSO $\lambda(P - \pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

	D or 65.			D or 70.			D or 75.	
AGE. x.	P.	$\lambda(P-\pi)$.	AGE. x.	P.	$\lambda(P-\pi)$.	AGE. x.	P.	$\lambda(P-\pi)$.
45	41.499	1.165036	37	23.520	0.565210	24	14.001	$\bar{1}$.840420
46	44.169	1.208648	38	24.528	0.598353	25	14.405	$\bar{1}$.866996
47	47.135	1.253832	39	25.607	0.632133	26	14.831	$\bar{1}$.893595
48	50.447	1.300737	40	26.762	0.666658	27	15.281	$\bar{1}$.920697
49	54.167	1.349551	41	28.001	0.701982	28	15.756	$\bar{1}$.948119
50	58.375	1.400484	42	29.335	0.738154	29	16.258	$\bar{1}$.975891
51	63.174	1.453807	43	30.769	0.775181	30	16.789	0.004106
52	68.694	1.509788	44	32.317	0.813167	31	17.350	0.032780
53	75.113	1.568822	45	33.991	0.852175	32	17.943	0.061754
54	82.673	1.631384	46	35.804	0.892256	33	18.571	0.091210
55	91.711	1.698067	47	37.775	0.933497	34	19.237	0.121330
56	102.713	1.769645	48	39.922	0.975974	35	19.942	0.151737
57	116.408	1.847174	49	42.270	1.019810	36	20.689	0.182472
58	133.941	1.932106	50	44.845	1.065076	37	21.483	0.214208
59	157.224	2.026593	51	47.682	1.111954	38	22.326	0.246474
60	189.696	2.133927	52	50.821	1.160505	39	23.222	0.279233
61	238.231	2.259621	53	54.313	1.210926	40	24.175	0.312622
62	318.870	2.413989	54	58.220	1.263428	41	25.189	0.346764
63	479.753	2.620184	55	62.621	1.318189	42	26.271	0.381638
			56	67.616	1.375481	43	27.424	0.417239
	D or 70.		57	73.338	1.435614	44	28.655	0.453639
			58	79.960	1.498957	45	29.973	0.490983
			59	87.723	1.566005	46	31.383	0.529174
10	10.461	$\bar{1}$.836830	60	96.960	1.637343	47	32.896	0.568331
11	10.678	$\bar{1}$.860158	61	108.151	1.713757	48	34.520	0.608526
12	10.907	$\bar{1}$.883718	62	122.019	1.796305	49	36.268	0.649812
13	11.148	$\bar{1}$.907411	63	139.702	1.886456	50	38.152	0.692256
14	11.402	$\bar{1}$.931356	64	163.086	1.986335	51	40.187	0.735998
15	11.669	$\bar{1}$.955688	65	195.577	2.099251	52	42.389	0.780987
16	11.950	$\bar{1}$.979912	66	243.984	2.230711	53	44.781	0.827415
17	12.247	0.004536	67	324.205	2.391049	54	47.384	0.875339
18	12.560	0.029343	68	483.901	2.603346	55	50.228	0.924925
19	12.889	0.054422				56	53.345	0.976281
20	13.237	0.079651		D or 75.		57	56.777	1.029538
21	13.605	0.105272				58	60.571	1.084855
22	13.992	0.131137				59	64.792	1.142461
23	14.402	0.157275	10	10.088	$\bar{1}$.497206	60	69.517	1.202557
24	14.835	0.183754	11	10.285	$\bar{1}$.520221	61	74.844	1.265398
25	15.293	0.210586	12	10.492	$\bar{1}$.543571	62	80.903	1.331322
26	15.777	0.237695	13	10.709	$\bar{1}$.567026	63	87.867	1.400704
27	16.289	0.265195	14	10.938	$\bar{1}$.590842	64	95.969	1.474015
28	16.833	0.293097	15	11.178	$\bar{1}$.614897	65	105.537	1.551885
29	17.409	0.321391	16	11.431	$\bar{1}$.638988	66	117.041	1.635077
30	18.018	0.350112	17	11.697	$\bar{1}$.663324	67	131.194	1.724712
31	18.666	0.379324	18	11.977	$\bar{1}$.687975	68	149.103	1.822091
32	19.354	0.408935	19	12.272	$\bar{1}$.712734	69	172.639	1.929527
33	20.086	0.439064	20	12.583	$\bar{1}$.737670	70	205.135	2.050237
34	20.865	0.469793	21	12.910	$\bar{1}$.762978	71	253.307	2.189751
35	21.694	0.500991	22	13.254	$\bar{1}$.788593	72	332.796	2.358365
36	22.577	0.532818	23	13.618	$\bar{1}$.814248			

TABLE LVI.

FIVE ANNUAL PREMIUM (P), ALSO $\lambda(P-\pi)$, FOR ENDOWMENT INSURANCE OF 1,000,
PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT

	D or 30.			D or 40.			D or 45.	
AGE. x.	P.	$\lambda(P-\pi)$.	AGE. x.	P.	$\lambda(P-\pi)$.	AGE. x.	P.	$\lambda(P-\pi)$.
10	106.053	1.983531	10	78.712	1.838461	31	130.936	2.059429
11	109.592	1.998426	11	80.971	1.851367	32	135.574	2.074759
12	113.295	2.013483	12	83.332	1.864452	33	140.430	2.090231
13	117.171	2.028696	13	85.805	1.877745	34	145.515	2.105851
14	121.226	2.044062	14	88.386	1.891195	35	150.839	2.121609
15	125.469	2.059574	15	91.092	1.904855	36	156.415	2.137509
16	129.909	2.075234	16	93.919	1.918679	37	162.261	2.153558
17	134.558	2.091037	17	96.874	1.932666	38	168.393	2.169764
18	139.423	2.106984	18	99.967	1.946830	39	174.824	2.186120
19	144.514	2.123062	19	103.201	1.961159	40	181.574	2.202634
20	149.845	2.139278	20	106.584	1.975654			
21	155.425	2.155624	21	110.123	1.990308		**D or 50.**	
22	161.267	2.172098	22	113.825	2.005115			
23	167.383	2.188697	23	117.697	2.020079	10	61.869	1.716798
24	173.788	2.205423	24	121.750	2.035195	11	63.338	1.727415
25	180.498	2.222272	25	125.989	2.050457	12	64.876	1.738256
			26	130.427	2.065872	13	66.482	1.749286
	D or 35.		27	135.068	2.081421	14	68.161	1.760517
			28	139.927	2.097112	15	69.913	1.771933
			29	145.018	2.112958	16	71.744	1.783539
10	90.774	1.908484	30	150.343	2.128929	17	73.659	1.795342
11	93.597	1.922434	31	155.922	2.145044	18	75.659	1.807330
12	96.551	1.936559	32	161.763	2.161289	19	77.749	1.819498
13	99.642	1.950861	33	167.890	2.177688	20	79.934	1.831855
14	102.876	1.965331	34	174.310	2.194224	21	82.215	1.844383
15	106.257	1.979964	35	181.039	2.210894	22	84.598	1.857078
16	109.796	1.994759				23	87.089	1.869954
17	113.499	2.009715		**D or 45.**		24	89.690	1.882991
18	117.373	2.024826				25	92.409	1.896195
19	121.427	2.040090	10	69.242	1.774283	26	95.250	1.909563
20	125.669	2.055504	11	71.058	1.786070	27	98.217	1.923083
21	130.108	2.071064	12	72.955	1.798052	28	101.318	1.936761
22	134.754	2.086765	13	74.940	1.810234	29	104.560	1.950596
23	139.616	2.102608	14	77.015	1.822608	30	107.945	1.964569
24	144.707	2.118590	15	79.184	1.835168	31	111.483	1.978692
25	150.036	2.134709	16	81.451	1.847914	32	115.184	1.992966
26	155.616	2.150963	17	83.821	1.860843	33	119.051	2.007377
27	161.458	2.167347	18	86.298	1.873951	34	123.098	2.021947
28	167.578	2.183865	19	88.890	1.887247	35	127.329	2.036649
29	173.989	2.200512	20	91.600	1.900715	36	131.752	2.051484
30	180.704	2.217287	21	94.431	1.914349	37	136.383	2.066468
			22	97.391	1.928147	38	141.234	2.081604
			23	100.488	1.942117	39	146.311	2.096879
			24	103.723	1.956242	40	151.632	2.112306
			25	107.108	1.970529	41	157.208	2.127887
			26	110.648	1.984974	42	163.061	2.143633
			27	114.348	1.999566	43	169.200	2.159538
			28	118.219	2.014313	44	175.653	2.175626
			29	122.269	2.029209	45	182.437	2.191901
			·30	126.504	2.044246			

FORMULA, $P_x = 1000 \dfrac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+5}} = \dfrac{A_x^{(m)}}{1 + a_x^4}$.

TABLE LVI.

FIVE ANNUAL PREMIUM (P), ALSO λ (P − π), FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 55.			D or 60.			D or 65.		
AGE. x.	P.	λ (P − π).	AGE. x.	P.	λ (P − π).	AGE. x.	P.	λ (P − π).
10	56.208	1.666834	16	58.694	1.678507	17	55.747	1.648466
11	57.413	1.676324	17	59.996	1.688058	18	56.906	1.657208
12	58.672	1.686008	18	61.353	1.697785	19	58.113	1.666112
13	59.987	1.695894	19	62.770	1.707688	20	59.371	1.675182
14	61.361	1.705974	20	64.248	1.717770	21	60.682	1.684414
15	62.795	1.716242	21	65.790	1.728022	22	62.049	1.693804
16	64.292	1.726698	22	67.396	1.738435	23	63.472	1.703346
17	65.856	1.737349	23	69.074	1.749028	24	64.955	1.713045
18	67.487	1.748169	24	70.822	1.759771	25	66.500	1.722890
19	69.194	1.759203	25	72.645	1.770675	26	68.110	1.732886
20	70.976	1.770409	26	74.546	1.781737	27	69.781	1.742988
21	72.835	1.781787	27	76.528	1.792950	28	71.528	1.753272
22	74.774	1.793333	28	78.594	1.804308	29	73.345	1.763670
23	76.801	1.805060	29	80.748	1.815814	30	75.232	1.774175
24	78.915	1.816947	30	82.991	1.827444	31	77.198	1.784805
25	81.122	1.829002	31	85.328	1.839207	32	79.243	1.795555
26	83.427	1.841224	32	87.768	1.851120	33	81.372	1.806412
27	85.831	1.853593	33	90.309	1.863151	34	83.586	1.817376
28	88.341	1.866119	34	92.957	1.875306	35	85.889	1.828432
29	90.962	1.878804	35	95.717	1.887577	36	88.281	1.839568
30	93.694	1.891620	36	98.591	1.899954	37	90.771	1.850807
31	96.547	1.904586	37	101.589	1.912455	38	93.362	1.862128
32	99.527	1.917698	38	104.715	1.925070	39	96.055	1.873523
33	102.637	1.930947	39	107.974	1.937790	40	98.855	1.884991
34	105.884	1.944330	40	111.372	1.950617	41	101.767	1.896527
35	109.276	1.957855	41	114.916	1.963548	42	104.798	1.908140
36	112.814	1.971497	42	118.616	1.976595	43	107.949	1.919805
37	116.513	1.985281	43	122.476	1.989744	44	111.225	1.931540
38	120.379	1.999202	44	126.509	2.003011	45	114.644	1.943338
39	124.418	2.013249	45	130.723	2.016394	46	118.200	1.955198
40	128.640	2.027427	46	135.128	2.029898	47	121.904	1.967124
41	133.056	2.041744	47	139.738	2.043533	48	125.766	1.979119
42	137.679	2.056206	48	144.566	2.057300	49	129.794	1.991187
43	142.517	2.070803	49	149.628	2.071237	50	134.001	2.003344
44	147.588	2.085556	50	154.940	2.085333	51	138.398	2.015592
45	152.904	2.100467	51	160.524	2.099620	52	142.996	2.027943
46	158.482	2.115545	52	166.399	2.114107	53	147.814	2.040421
47	164.341	2.130805	53	172.594	2.128833	54	152.872	2.053054
48	170.502	2.146258	54	179.140	2.143829	55	158.191	2.065863
49	176.988	2.161921	55	186.071	2.159133	56	163.792	2.078876
50	183.827	2.177823				57	169.708	2.092141
						58	175.966	2.105692
						59	182.614	2.119599
						60	189.696	2.133927

D or 60.			D or 65.		
			10	48.874	1.592176
10	51.955	1.625114	11	49.735	1.599683
11	52.962	1.633556	12	50.635	1.607377
12	54.012	1.642170	13	51.573	1.615248
13	55.109	1.650978	14	52.553	1.623298
14	56.254	1.659974	15	53.573	1.631514
15	57.448	1.669149	16	54.637	1.639898

TABLE LVI.

FIVE ANNUAL PREMIUM (P), ALSO $\lambda(P - \pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 70.

AGE. x.	P.	$\lambda(P - \pi)$.
10	46.763	1.568076
11	47.526	1.574872
12	48.322	1.581829
13	49.152	1.588960
14	50.017	1.596258
15	50.919	1.603719
16	51.858	1.611327
17	52.838	1.619113
18	53.859	1.627054
19	54.923	1.635154
20	56.031	1.643405
21	57.185	1.651808
22	58.386	1.660356
23	59.638	1.669058
24	60.938	1.677877
25	62.292	1.686848
26	63.702	1.695946
27	65.165	1.705159
28	66.690	1.714506
29	68.275	1.723966
30	69.919	1.733517
31	71.629	1.743179
32	73.404	1.752924
33	75.252	1.762785
34	77.169	1.772715
35	79.158	1.782714
36	81.220	1.792769
37	83.362	1.802892
38	85.586	1.813074
39	87.892	1.823293
40	90.283	1.833548
41	92.762	1.843827
42	95.335	1.854139
43	98.000	1.864456
44	100.766	1.874787
45	103.634	1.885123
46	106.607	1.895453
47	109.692	1.905778
48	112.891	1.916089
49	116.212	1.926390
50	119.661	1.936679

D or 70.

AGE. x.	P.	$\lambda(P - \pi)$.
51	123.245	1.946960
52	126.967	1.957208
53	130.845	1.967477
54	134.884	1.977748
55	139.099	1.988038
56	143.499	1.998360
57	148.107	2.008743
58	152.933	2.019199
59	158.008	2.029783
60	163.357	2.040535
61	169.011	2.051507
62	175.008	2.062769
63	181.398	2.074414
64	188.230	2.086527
65	195.577	2.099251

D or 75.

AGE. x.	P.	$\lambda(P - \pi)$.
10	45.444	1.552301
11	46.145	1.558602
12	46.875	1.565061
13	47.638	1.571681
14	48.432	1.578460
15	49.259	1.585385
16	50.121	1.592460
17	51.019	1.599695
18	51.955	1.607081
19	52.929	1.614612
20	53.943	1.622288
21	54.998	1.630102
22	56.096	1.638054
23	57.238	1.646131
24	58.426	1.654345
25	59.661	1.662689
26	60.945	1.671141
27	62.278	1.679703
28	63.665	1.688381
29	65.104	1.697159
30	66.597	1.706013
31	68.147	1.714968

D or 75.

AGE. x.	P.	$\lambda(P - \pi)$.
32	69.756	1.723993
33	71.425	1.733094
34	73.156	1.742266
35	74.950	1.751476
36	76.805	1.760717
37	78.730	1.770005
38	80.725	1.779325
39	82.788	1.788652
40	84.923	1.797979
41	87.132	1.807300
42	89.418	1.816611
43	91.780	1.825882
44	94.224	1.835122
45	96.749	1.844309
46	99.358	1.853434
47	102.055	1.862490
48	104.841	1.871459
49	107.720	1.880339
50	110.695	1.889115
51	113.771	1.897785
52	116.948	1.906322
53	120.235	1.914738
54	123.637	1.923025
55	127.161	1.931181
56	130.811	1.939194
57	134.600	1.947074
58	138.529	1.954800
59	142.623	1.962432
60	146.889	1.969949
61	151.343	1.977375
62	156.006	1.984743
63	160.907	1.992106
64	166.068	1.999498
65	171.528	2.007005
66	177.323	2.014694
67	183.513	2.022728
68	190.152	2.031155
69	197.334	2.040271
70	205.135	2.050237

TABLE LVII.

TEN ANNUAL PREMIUM (P), ALSO $\lambda\,(\mathrm{P}-\pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 30.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	59.073	1.692836
11	61.047	1.708370
12	63.114	1.724049
13	65.278	1.739872
14	67.543	1.755833
15	69.912	1.771927
16	72.393	1.788154
17	74.991	1.804513
18	77.711	1.821000
19	80.559	1.837609
20	83.542	1.854341

D or 35.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	50.562	1.610534
11	52.138	1.625153
12	53.786	1.639928
13	55.512	1.654872
14	57.318	1.669970
15	59.207	1.685216
16	61.185	1.700611
17	63.255	1.716155
18	65.421	1.731841
19	67.689	1.747668
20	70.063	1.763631
21	72.549	1.779731
22	75.152	1.795963
23	77.878	1.812326
24	80.733	1.828821
25	83.725	1.845446

D or 40.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	43.844	1.532368
11	45.105	1.545939
12	46.423	1.559682
13	47.803	1.573607
14	49.246	1.587684
15	50.757	1.601961
16	52.337	1.616392
17	53.990	1.630969
18	55.719	1.645712
19	57.529	1.660609
20	59.423	1.675660
21	61.405	1.690861
22	63.480	1.706204
23	65.651	1.721694

D or 40.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
24	67.925	1.737328
25	70.306	1.753103
26	72.800	1.769018
27	75.410	1.785063
28	78.146	1.801246
29	81.015	1.817579
30	84.019	1.834038

D or 45.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	38.568	1.459311
11	39.582	1.471713
12	40.642	1.484297
13	41.750	1.497075
14	42.910	1.510035
15	44.122	1.523169
16	45.389	1.536479
17	46.715	1.549963
18	48.101	1.563619
19	49.552	1.577441
20	51.069	1.591429
21	52.655	1.605572
22	54.315	1.619876
23	56.052	1.634337
24	57.868	1.648946
25	59.770	1.663709
26	61.760	1.678621
27	63.842	1.693674
28	66.023	1.708878
29	68.306	1.724224
30	70.696	1.739709
31	73.202	1.755344
32	75.827	1.771120
33	78.579	1.787046
34	81.466	1.803123
35	84.494	1.819347

D or 50.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	34.462	1.392484
11	35.283	1.403625
12	36.141	1.414955
13	37.038	1.426482
14	37.976	1.438201
15	38.956	1.450095
16	39.980	1.462172
17	41.051	1.474435

D or 50.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
18	42.171	1.486872
19	43.341	1.499481
20	44.565	1.512267
21	45.844	1.525216
22	47.180	1.538324
23	48.578	1.551600
24	50.039	1.565032
25	51.567	1.578620
26	53.165	1.592361
27	54.835	1.606247
28	56.584	1.620290
29	58.413	1.634480
30	60.325	1.648805
31	62.326	1.663279
32	64.422	1.677900
33	66.616	1.692658
34	68.916	1.707581
35	71.325	1.722638
36	73.848	1.737844
37	76.496	1.753204
38	79.275	1.768732
39	82.193	1.784423
40	85.258	1.800288

D or 55.

AGE. x.	P.	$\lambda\,(\mathrm{P}-\pi)$.
10	31.308	1.333133
11	31.982	1.342979
12	32.685	1.353008
13	33.420	1.363236
14	34.188	1.373646
15	34.990	1.384237
16	35.827	1.395008
17	36.703	1.405966
18	37.616	1.417076
19	38.572	1.428400
20	39.571	1.439877
21	40.613	1.451521
22	41.702	1.463319
23	42.839	1.475290
24	44.027	1.487409
25	45.269	1.499686
26	46.566	1.512117
27	47.920	1.524686
28	49.336	1.537405
29	50.816	1.550270
30	52.361	1.563263
31	53.976	1.576399

$$\text{FORMULA,} \quad \mathrm{P}_x = 1000\,\frac{\mathrm{M}_x - \mathrm{M}_{x+m} + \mathrm{D}_{x+m}}{\mathrm{N}_x - \mathrm{N}_{x+10}} = \frac{\mathrm{A}_x^{(m)}}{1 + a_x^9}.$$

TABLE LVII.

TEN ANNUAL PREMIUM (P), ALSO $\lambda (P - \pi)$, FOR ENDOWMENT INSURANCE OF 1,000,
PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 55.

AGE. x.	P.	$\lambda (P - \pi)$.
32	55.665	1.589673
33	57.432	1.603081
34	59.279	1.616620
35	61.212	1.630306
36	63.233	1.644112
37	65.351	1.658064
38	67.569	1.672161
39	69.894	1.686402
40	72.331	1.700792
41	74.887	1.715340
42	77.572	1.730049
43	80.395	1.744960
44	83.364	1.760054
45	86.492	1.775362

D or 60.

AGE. x.	P.	$\lambda (P - \pi)$.
10	28.939	1.282518
11	29.502	1.291120
12	30.089	1.299878
13	30.702	1.308825
14	31.343	1.317950
15	32.010	1.327245
16	32.708	1.336710
17	33.437	1.346357
18	34.197	1.356167
19	34.991	1.366141
20	35.820	1.376278
21	36.685	1.386574
22	37.587	1.397017
23	38.529	1.407620
24	39.512	1.418368
25	40.538	1.429258
26	41.609	1.440287
27	42.726	1.451455
28	43.893	1.462753
29	45.110	1.474183
30	46.379	1.485723
31	47.704	1.497390
32	49.088	1.509178
33	50.533	1.521081
34	52.042	1.533097
35	53.617	1.545218
36	55.261	1.557442
37	56.980	1.569782
38	58.777	1.582234
39	60.656	1.594795
40	62.621	1.607464
41	64.678	1.620253
42	66.833	1.633167

D or 60.

AGE. x.	P.	$\lambda (P - \pi)$.
43	69.090	1.646207
44	71.458	1.659392
45	73.944	1.672733
46	76.557	1.686238
47	79.305	1.699929
48	82.200	1.713828
49	85.255	1.727968
50	88.483	1.742373

D or 65.

AGE. x.	P.	$\lambda (P - \pi)$.
10	27.223	1.241780
11	27.705	1.249228
12	28.207	1.256850
13	28.732	1.264638
14	29.280	1.272591
15	29.851	1.280697
16	30.447	1.288951
17	31.069	1.297377
18	31.718	1.305959
19	32.395	1.314682
20	33.101	1.323553
21	33.837	1.332570
22	34.604	1.341721
23	35.405	1.351001
24	36.239	1.360423
25	37.109	1.369963
26	38.016	1.379632
27	38.962	1.389409
28	39.947	1.399291
29	40.974	1.409287
30	42.043	1.419366
31	43.159	1.429547
32	44.321	1.439816
33	45.532	1.450171
34	46.796	1.460606
35	48.112	1.471107
36	49.482	1.481668
37	50.912	1.492299
38	52.404	1.503000
39	53.960	1.513757
40	55.583	1.524562
41	57.277	1.535424
42	59.047	1.546353
43	60.895	1.557327
44	62.828	1.568371
45	64.850	1.579485
46	66.966	1.590670
47	69.184	1.601943
48	71.511	1.613318

D or 65.

AGE. x.	P.	$\lambda (P - \pi)$.
49	73.955	1.624815
50	76.525	1.636458
51	79.233	1.648277
52	82.090	1.660296
53	85.110	1.672563
54	88.311	1.685133
55	91.711	1.698067

D or 70.

AGE. x.	P.	$\lambda (P - \pi)$.
10	26.048	1.211486
11	26.474	1.218028
12	26.919	1.224712
13	27.383	1.231551
14	27.868	1.238538
15	28.372	1.245673
16	28.898	1.252928
17	29.448	1.260341
18	30.020	1.267882
19	30.617	1.275560
20	31.239	1.283360
21	31.887	1.291287
22	32.562	1.299331
23	33.266	1.307502
24	33.998	1.315752
25	34.761	1.324126
26	35.556	1.332590
27	36.383	1.341134
28	37.245	1.349779
29	38.142	1.358495
30	39.074	1.367263
31	40.045	1.376104
32	41.055	1.384977
33	42.108	1.393931
34	43.202	1.402908
35	44.341	1.411908
36	45.525	1.420917
37	46.757	1.429943
38	48.040	1.438980
39	49.375	1.448010
40	50.764	1.457022
41	52.209	1.466010
42	53.716	1.474987
43	55.283	1.483916
44	56.917	1.492818
45	58.621	1.501682
46	60.398	1.510501
47	62.253	1.519279
48	64.190	1.528014
49	66.216	1.536723

TABLE LVII.

TEN ANNUAL PREMIUM (P), ALSO λ (P — π), FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AGE 30, 35, ... 75.

4 PER CENT.

D or 70.			D or 75.			D or 75.		
AGE. x.	P.	λ (P — π).	AGE. x.	P.	λ (P — π).	AGE. x.	P.	λ (P — π).
50	68.336	1.545404	19	29.505	1.249176	43	51.774	1.430786
51	70.559	1.554086	20	30.074	1.256198	44	53.222	1.437888
52	72.887	1.562734	21	30.667	1.263328	45	54.727	1.444843
53	75.339	1.571470	22	31.285	1.270560	46	56.291	1.451631
54	77.920	1.580248	23	31.927	1.277873	47	57.919	1.458248
55	80.643	1.589137	24	32.596	1.285289	48	59.613	1.464674
56	83.519	1.598159	25	33.293	1.292792	49	61.377	1.470913
57	86.571	1.607430	26	34.017	1.300356	50	63.216	1.476939
58	89.810	1.616970	27	34.771	1.307984	51	65.133	1.482745
59	93.265	1.626906	28	35.555	1.315681	52	67.138	1.488374
60	96.960	1.637343	29	36.371	1.323421	53	69.230	1.493740
			30	37.217	1.331190	54	71.422	1.498907
D or 75.			31	38.099	1.339006	55	73.722	1.503878
			32	39.014	1.346826	56	76.135	1.508644
			33	39.966	1.354664	57	78.676	1.513255
10	25.313	1.191417	34	40.956	1.362511	58	81.351	1.517700
11	25.705	1.197311	35	41.984	1.370324	59	84.183	1.522105
12	26.113	1.203340	36	43.050	1.378103	60	87.185	1.526473
13	26.540	1.209510	37	44.159	1.385851	61	90.374	1.530890
14	26.985	1.215815	38	45.311	1.393554	62	93.773	1.535485
15	27.448	1.222238	39	46.508	1.401190	63	97.414	1.540400
16	27.930	1.228785	40	47.750	1.408741	64	101.322	1.545788
17	28.434	1.235465	41	49.040	1.416198	65	105.537	1.551885
18	28.958	1.242263	42	50.382	1.423557			

TABLE LVIII.

CONTINUED ANNUAL PREMIUM (P), ALSO $\lambda(P-\pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AT THE END OF m YEARS.

4 PER CENT.

AGE. x.	$m=5.$ P.	$\lambda(P-\pi).$	10. P.	$\lambda(P-\pi).$	15. P.	$\lambda(P-\pi).$	20. P.	$\lambda(P-\pi).$	AGE. x.
15	180.291	2.229234	83.428	1.861309	51.732	1.612429	36.329	1.407614	15
16	180.303	.228678	83.447	.860046	51.757	.610247	36.361	.404235	16
17	180.317	.228095	83.468	.858725	51.783	.607961	36.395	.400686	17
18	180.333	.227483	83.489	.857333	51.813	.605559	36.433	.396956	18
19	180.350	.226842	83.514	.855874	51.845	.603035	36.475	.393033	19
20	180.370	2.226172	83.543	1.854341	51.881	1.600380	36.522	1.388904	20
21	180.391	.225467	83.572	.852734	51.921	.597591	36.572	.384560	21
22	180.414	.224724	83.605	.851045	51.964	.594660	36.628	.379985	22
23	180.439	.223945	83.641	.849268	52.012	.591575	36.689	.375175	23
24	180.467	.223129	83.682	.847402	52.064	.588336	36.755	.370093	24
25	180.498	2.222271	83.724	1.845446	52.122	1.584928	36.831	1.364770	25
26	180.532	.221370	83.774	.843387	52.186	.581343	36.912	.359150	26
27	180.569	.220425	83.826	.841222	52.254	.577567	37.002	.353220	27
28	180.611	.219432	83.884	.838949	52.331	.573597	37.101	.346973	28
29	180.657	.218388	83.950	.836557	52.416	.569415	37.210	.340389	29
30	180.705	2.217289	84.019	1.834038	52.509	1.565009	37.328	1.333433	30
31	180.759	.216135	84.097	.831394	52.610	.560372	37.459	.326094	31
32	180.819	.214920	84.182	.828607	52.722	.555482	37.605	.318354	32
33	180.886	.213646	84.277	.825679	52.846	.550330	37.763	.310173	33
34	180.960	.212308	84.380	.822599	52.982	.544901	37.938	.301516	34
35	181.039	2.210894	84.495	1.819347	53.131	1.539171	38.130	1.292396	35
36	181.125	.209405	84.619	.815924	53.295	.533121	38.341	.282731	36
37	181.221	.207839	84.756	.812315	53.476	.526732	38.574	.272498	37
38	181.329	.206197	84.908	.808520	53.676	.520002	38.829	.261674	38
39	181.446	.204462	85.075	.804513	53.894	.512879	39.111	.250205	39
40	181.574	2.202633	85.259	1.800288	54.135	1.505348	39.420	1.238041	40
41	181.714	.200706	85.459	.795826	54.400	.497389	39.760	.225149	41
42	181.871	.198679	85.682	.791126	54.693	.488973	40.136	.211460	42
43	182.041	.196538	85.925	.786154	55.014	.480051	40.547	.196922	43
44	182.229	.194281	86.195	.780906	55.367	.470606	41.001	.181469	44
45	182.437	2.191901	86.491	1.775361	55.756	1.460599	41.498	1.165036	45
46	182.665	.189389	86.818	.769493	56.184	.449981	42.047	.147534	46
47	182.915	.186730	87.177	.763284	56.655	.438712	42.650	.128887	47
48	183.190	.183924	87.571	.756711	57.174	.426745	43.313	.108998	48
49	183.494	.180960	88.006	.749750	57.746	.414025	44.042	.087771	49
50	183.828	2.177825	88.483	1.742373	58.375	1.400488	44.845	1.065079	50
51	184.196	.174508	89.010	.734554	59.069	.386092	45.728	.040832	51
52	184.598	.170989	89.590	.726243	59.832	.370731	46.698	.014843	52
53	185.041	.167261	90.230	.717419	60.672	.354350	47.765	0.986987	53
54	185.531	.163316	90.935	.708040	61.600	.336868	48.938	.957080	54
55	186.071	2.159134	91.711	1.698067	62.621	1.318187	50.228	0.924935	55
56	186.664	.154692	92.566	.687439	63.746	.298183	51.645	.890354	56
57	187.318	.149973	93.510	.676122	64.986	.276765	53.203	.853083	57
58	188.034	.144951	94.550	.664036	66.351	.253779	54.911	.812780	58
59	188.825	.139615	95.695	.651135	67.856	.229103	56.790	.769348	59
60	189.696	2.133925	96.959	1.637341	69.517	1.202557	58.850	0.722272	60
61	190.655	.127866	98.354	.622568	71.346	.173961	61.110	.671219	61
62	191.711	.121406	99.892	.606746	73.362	.143121	63.586	.615708	62
63	192.878	.114511	101.592	.589771	75.586	.109825	66.299	.555336	63
64	194.161	.107135	103.467	.571521	78.035	.073755	69.269	.489396	64
65	195.578	.099252	105.537	.551884	80.733	.034697	72.515	.417223	65

FORMULA, $\quad P_x^m = 1000 \dfrac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+m}} = 1000 \left\{ \dfrac{1}{1+a_x^{m-1}} - (1-v) \right\}.$

TABLE LVIII. *145

CONTINUED ANNUAL PREMIUM (P), ALSO λ (P — π), FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AT THE END OF *m* YEARS.

4 PER CENT.

AGE. x.	25.		30.		35.		40.		AGE. x.
	P.	λ (P—π).	P.	λ (P—π).	P.	λ (P—π).	P.	λ (P—π).	
15	27.444	1.222149	21.821	1.043559	18.066	0.863341	15.486	0.673951	15
16	27.484	.217189	21.872	.036501	18.131	.853449	15.568	.660192	16
17	27.528	.211979	21.929	.029067	18.203	.843015	15.658	.645629	17
18	27.577	.206491	21.991	.021231	18.281	.831985	15.758	.630204	18
19	27.631	.200711	22.059	.012960	18.368	.820320	15.866	.613842	19
20	27.690	1.194625	22.134	1.004235	18.463	0.807995	15.985	0.596520	20
21	27.755	.188205	22.216	0.995016	18.567	.794948	16.116	.578146	21
22	27.826	.181440	22.307	.985287	18.681	.781138	16.259	.558613	22
23	27.904	.174316	22.406	.975013	18.807	.766517	16.416	.537882	23
24	27.990	.166791	22.516	.964146	18.945	.751017	16.588	.515847	24
25	28.085	1.158857	22.636	0.952657	19.096	0.734592	16.776	0.492411	25
26	28.190	.150480	22.768	.940507	19.262	.717163	16.982	.467475	26
27	28.304	.141635	22.913	.927642	19.444	.698666	17.208	.440909	27
28	28.430	.132292	23.073	.914015	19.644	.679001	17.455	.412578	28
29	28.569	.122425	23.248	.899585	19.864	.658126	17.725	.382395	29
30	28.720	1.111978	23.440	0.884280	20.103	0.635906	18.019	0.350112	30
31	28.888	.100936	23.651	.868050	20.366	.612265	18.340	.315656	31
32	29.072	.089248	23.883	.850818	20.655	.587082	18.690	.278799	32
33	29.274	.076870	24.138	.832515	20.970	.560218	19.073	.239325	33
34	29.496	.063765	24.417	.813067	21.316	.531581	19.489	.197087	34
35	29.741	1.049865	24.724	0.792378	21.694	0.500991	19.943	0.151737	35
36	30.009	035121	25.059	.770351	22.106	.468288	20.434	.103051	36
37	30.303	.019461	25.428	.746875	22.557	.433290	20.969	.050650	37
38	30.628	.002853	25.833	.721868	23.050	.395868	21.550	1.994405	38
39	30.984	0.985184	26.277	.695175	23.588	.355739	22.178	.933740	39
40	31.375	0.966381	26.762	0.666658	24.175	0.312622	22.859	1.868292	40
41	31.805	.946383	27.294	.636187	24.814	.266373	23.594	.797683	41
42	32.278	.925070	27.877	.603577	25.509	.216641	24.389	.721233	42
43	32.796	.902340	28.513	.568636	26.266	.163072	25.245	.638589	43
44	33.366	.878079	29.211	.531159	27.088	.105272	26.167	.548635	44
45	33.991	0.852175	29.973	0.490969	27.980	0.043087	27.158	1.451172	45
46	34.677	.824464	30.805	.447732	28.947	1.975707	28.223	.344785	46
47	35.429	.794802	31.714	.401245	29.994	.902818	29.364	.228400	47
48	36.254	.763008	32.705	.351120	31.126	.823670	30.586	.099681	48
49	37.160	728914	33.785	.297082	32.350	.737908	31.894	2.959041	49
50	38.151	0.692256	34.961	0.238648	33.669	1.644340	33.291	2.797960	50
51	39.238	.652894	36.240	.175599	35.091	.542825	34.784	.624282	51
52	40.429	.610479	37.630	.107108	36.620	.430881	36.377	.426511	52
53	41.730	.564737	39.138	.032820	38.263	.307496	38.076	.206826	53
54	43.155	.515344	40.775	1.952066	40.028	.171141	39.888	3.963788	54
55	44.713	0.461934	42.547	1.864096	41.920	1.018284	41.821	3.681241	55
56	46.412	.404115	44.462	.767823	43.947	2.846337	43.879	.397940	56
57	48.268	.341355	46.533	.662286	46.118	.656098	46.074	4.954243	57
58	50.289	.272978	48.764	.544564	48.442	.462398	48.414	.477121	58
59	52.490	.198904	51.171	.415808	50.926	.209515	50.910	—∞	59
60	54.886	0.117735	53.760	1.269513	53.583	3.934498			60
61	57.488	.028815	56.547	.105851	56.424	.623249			61
62	60.311	1.931305	59.543	2.924279	59.461	.278754			62
63	63.374	.823148	62.761	.724276	62.709	4.845098			63
64	66.687	.702344	66.214	.495544	66.184	.477121			64
65	70.270	.566084	69.920	.240549					65

FIVE ANNUAL PREMIUM (P), ALSO λ(P−π), FOR ENDOWMENT INSURANCE OF 1,000,
PAYABLE AT DEATH OR AT THE END OF m YEARS.

4 PER CENT.

AGE.	$m=$10.		15.		20.		25.		AGE.
x.	P.	λ(P−π).	P.	λ(P−π).	P.	λ(P−π).	P.	λ(P−π).	x.
15	149.726	2.142890	125.469	2.059574	106.257	1.979964	91.092	1.904855	15
16	149.745	.142233	125.501	.058828	106.310	.979162	91.174	.904060	16
17	149.767	.141547	125.537	.058050	106.370	.978331	91.266	.903252	17
18	149.790	.140822	125.577	.057237	106.434	.977471	91.367	.902423	18
19	149.816	.140068	125.621	.056390	106.506	.976578	91.477	.901575	19
20	149.845	2.139278	125.669	2.055504	106.584	1.975654	91.600	1.900715	20
21	149.877	.138451	125.722	.054583	106.670	.974696	91.733	.899833	21
22	149.911	.137579	125.779	.053612	106.764	.973702	91.878	.898937	22
23	149.949	.136667	125.842	.052602	106.869	.972680	92.040	.898035	23
24	149.990	.135711	125.912	.051554	106.980	.971610	92.215	.897117	24
25	150.036	2.134709	125.989	2.050457	107.108	1.970529	92.409	1.896195	25
26	150.087	.133661	126.074	.049315	107.247	.969407	92.622	.895275	26
27	150.142	.132561	126.167	.048127	107.397	.968243	92.853	.894347	27
28	150.203	.131407	126.269	.046885	107.563	.967053	93.109	.893429	28
29	150.271	.130199	126.382	.045593	107.747	.965833	93.390	.892525	29
30	150.343	2.128929	126.504	2.044246	107.945	1.964569	93.694	1.891620	30
31	150.424	.127601	126.639	.042843	108.163	.963278	94.028	.890740	31
32	150.513	.126206	126.788	.041385	108.405	.961964	94.396	.889892	32
33	150.612	.124745	126.951	.039862	108.669	.960618	94.798	.889077	33
34	150.721	.123218	127.132	.038290	108.957	.959240	95.237	.888305	34
35	150.839	2.121609	127.329	2.036649	109.276	1.957855	95.717	1.887577	35
36	150.967	.119918	127.543	.034937	109.621	.956430	96.239	.886898	36
37	151.110	.118149	127.780	.033162	110.001	.954995	96.810	.886293	37
38	151.269	.116299	128.042	.031328	110.419	.953548	97.435	.885774	38
39	151.442	.114351	128.327	.029412	110.874	.952086	98.115	.885333	39
40	151.632	2.112306	128.640	2.027427	111.372	1.950617	98.855	1.884991	40
41	151.839	.110159	128.983	.025372	111.916	.949142	99.659	.884754	41
42	152.071	.107915	129.361	.023244	112.512	.947677	100.536	.884646	42
43	152.321	.105547	129.773	.021036	113.161	.946212	101.485	.884657	43
44	152.599	.103071	130.226	.018755	113.871	.944766	102.517	.884815	44
45	152.904	2.100467	130.723	2.016394	114.644	1.943338	103.634	1.885123	45
46	153.238	.097733	131.266	.013953	115.486	.941934	104.841	.885585	46
47	153.606	.094859	131.861	.011427	116.404	.940561	106.146	.886215	47
48	154.010	.091843	132.511	.008817	117.401	.939223	107.552	.887010	48
49	154.453	.088668	133.223	.006124	118.485	.937929	109.067	.887979	49
50	154.940	2.085333	134.001	2.003344	119.661	1.936679	110.695	1.889115	50
51	155.476	.081829	134.852	.000477	120.937	.935482	112.442	.890421	51
52	156.062	.078137	135.778	1.997507	122.316	.934328	114.310	.891873	52
53	156.705	.074250	136.789	.994446	123.809	.933228	116.307	.893467	53
54	157.413	.070164	137.894	.991293	125.421	.932178	118.436	.895188	54
55	158.191	2.065863	139.099	1.988038	127.161	1.931181	120.704	1.897011	55
56	159.043	.061328	140.409	.984673	129.032	.930214	123.107	.898894	56
57	159.979	.056547	141.836	.981196	131.045	.929276	125.654	.900809	57
58	161.002	.051496	143.382	.977582	133.198	.928319	128.338	.902681	58
59	162.125	.046164	145.063	.973839	135.510	.927370	131.172	.904511	59
60	163.357	2.040535	146.889	1.969949	137.980	1.926372	134.151	1.906207	60
61	164.707	.034576	148.866	.965889	140.616	.925294	137.276	.907713	61
62	166.186	.028279	151.005	.961643	143.421	.924088	140.545	.908951	62
63	167.809	.021607	153.322	.957195	146.406	.922718	143.966	.909865	63
64	169.583	.014521	155.821	.952491	149.573	.921111	147.533	.910359	64
65	171.528	.007005	158.520	.947522	152.928	.919214	151.253	.910363	65

$$\text{Formula,} \quad \mathrm{P}_x = 1000 \left\{ \frac{\mathrm{M}_x - \mathrm{M}_{x+m} + \mathrm{D}_{x+m}}{\mathrm{N}_x - \mathrm{N}_{x+5}} \right\} = \frac{\mathrm{A}_x^{(m)}}{1 + a_x^4}.$$

TABLE LIX. *147

FIVE ANNUAL PREMIUM (P) ALSO $\lambda\,(P-\pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH, OR AT THE END OF m YEARS.

4 PER CENT.

AGE.	30.		35.		40.		AGE.
x.	P.	$\lambda\,(P-\pi)$.	P.	$\lambda\,(P-\pi)$.	P.	$\lambda\,(P-\pi)$.	x.
15	79.184	1.835168	69.913	1.771933	62.795	1.716242	15
16	79.306	834492	70.088	.771532	63.035	.716335	16
17	79.442	.833820	70.281	.771177	63.299	.716526	17
18	79.591	.833154	70.491	.770865	63.588	.716821	18
19	79.754	.832495	70.722	.770603	63.903	.717227	19
20	79.934	1.831855	70.976	1.770409	64.248	1.717770	20
21	80.130	.831226	71.253	.770280	64.625	.718453	21
22	80.344	.830618	71.555	.770228	65.034	.719284	22
23	80.581	.830045	71.887	.770273	65.482	.720297	23
24	80.839	.829502	72.249	.770416	65.969	.721491	24
25	81.122	1.829002	72.645	1.770675	66.500	1.722890	25
26	81.433	.828559	73.078	.771070	67.078	.724518	26
27	81.771	.828166	73.549	.771595	67.704	.726372	27
28	82.143	.827845	74.063	.772279	68.385	.728482	28
29	82.550	.827609	74.625	.773145	69.123	.730870	29
30	82.991	1.827444	75.232	1.774175	69.919	1.733517	30
31	83.474	.827388	75.894	.775415	70.781	.736471	31
32	84.002	.827446	76.614	.776876	71.711	.739740	32
33	84.578	.827632	77.396	.778571	72.714	.743326	33
34	85.206	.827958	78.242	.780516	73.793	.747239	34
35	85.889	1.828432	79.158	1.782714	74.950	1.751476	35
36	86.628	.829058	80.145	.785175	76.186	.756027	36
37	87.434	.829875	81.212	.787932	77.511	.760918	37
38	88.310	.830894	82.362	.790987	78.925	.766137	38
39	89.258	.832112	83.598	.794336	80.429	.771652	39
40	90.283	1.833548	84.923	1.797979	82.025	1.777457	40
41	91.391	.835208	86.342	.801922	83.713	.783522	41
42	92.588	.837119	87.861	.806168	85.499	.789839	42
43	93.875	.839260	89.478	.810687	87.378	.796356	43
44	95.261	.841661	91.199	.815480	89.354	.803052	44
45	96.749	1.844309	93.025	1.820524	91.424	1.809883	45
46	98.341	.847203	94.957	.825787	93.587	.816806	46
47	100.045	.850342	96.997	.831245	95.841	.823778	47
48	101.861	.853702	99.144	.836855	98.185	.830749	48
49	103.794	.857277	101.399	.842585	100.618	.837683	49
50	105.845	1.861037	103.760	1.848385	103.136	1.844523	50
51	108.018	.864963	106.226	.854213	105.739	.851239	51
52	110.311	.869000	108.794	.860000	108.423	.857772	52
53	112.726	.873125	111.462	.865709	111.188	.864088	53
54	115.265	.877293	114.230	.871289	114.035	.870148	54
55	117.928	1.881455	117.097	1.876686	116.963	1.875917	55
56	120.709	.885543	120.055	.881833	119.969	.881341	56
57	123.610	.889507	123.109	.886696	123.056	.886392	57
58	126.622	.893259	126.256	.891219	126.224	.891042	58
59	129.756	.896782	129.489	.895309	129.472	.895215	59
60	133.004	1.899981	132.820	1.898975			60
61	136.366	.902797	136.245	.902142			61
62	139.842	.905166	139.765	.904755			62
63	143.437	.907030	143.392	.906786			63
64	147.149	.908303	147.124	.908167			64
65	150.985	.908931					65

TABLE LX.

TEN ANNUAL PREMIUM (P) ALSO $\lambda(P-\pi)$, FOR ENDOWMENT INSURANCE OF 1,000, PAYABLE AT DEATH OR AT THE END OF m YEARS.

4 PER CENT.

AGE.	$m=15.$		20.		25.		AGE.
	P.	$\lambda(P-\pi)$.	P.	$\lambda(P-\pi)$.	P.	$\lambda(P-\pi)$.	
15	69.912	1.771927	59.207	1.685216	50.757	1.601961	15
16	69.937	.770420	59.243	.683472	50.808	.600017	16
17	69.964	.768843	59.281	.681649	50.864	.598000	17
18	69.994	.767188	59.324	.679742	50.926	.595895	18
19	70.027	.765453	59.371	.677748	50.994	.593706	19
20	70.063	1.763631	59.423	1.675660	51.069	1.591429	20
21	70.103	.761723	59.480	.673478	51.151	.589058	21
22	70.147	.759720	59.542	.671194	51.241	.586594	22
23	70.195	.757617	59.611	.668810	51.340	.584037	23
24	70.248	.755414	59.685	.666304	51.448	.581376	24
25	70.306	1.753103	59.770	1.663709	51.567	1.578620	25
26	70.370	.750677	59.861	.660987	51.698	.575763	26
27	70.440	.748129	59.961	.658133	51.841	.572794	27
28	70.518	.745459	60.071	.655162	51.999	.569729	28
29	70.604	.742655	60.193	.652058	52.173	.566555	29
30	70.696	1.739709	60.325	1.648805	52.361	1.563263	30
31	70.799	.736621	60.470	.645411	52.568	.559867	31
32	70.912	.733376	60.631	.641875	52.796	.556367	32
33	71.037	.729968	60.807	.638180	53.045	.552757	33
34	71.174	.726396	60.999	.634316	53.318	.549045	34
35	71.325	1.722638	61.212	1.630306	53.617	1.545218	35
36	71.489	.718687	61.443	.626103	53.943	.541282	36
37	71.670	.714537	61.698	.621728	54.300	.537246	37
38	71.870	.710185	61.979	.617169	54.691	.533119	38
39	72.090	.705606	62.285	.612419	55.118	.528888	39
40	72.331	1.700792	62.621	1.607464	55.583	1.524562	40
41	72.595	.695729	62.989	.602305	56.091	.520146	41
42	72.887	.690414	63.394	.596938	56.646	.515653	42
43	73.206	.684812	63.835	.591346	57.249	.511067	43
44	73.558	.678925	64.320	.585530	57.906	.506410	44
45	73.944	1.672733	64.850	1.579485	58.621	1.501682	45
46	74.369	.666212	65.429	.573190	59.398	.496877	46
47	74.835	.659343	66.062	.566645	60.241	.492005	47
48	75.346	.652110	66.754	.559836	61.154	.487056	48
49	75.908	.644490	67.511	.552765	62.145	.482041	49
50	76.525	1.636458	68.336	1.545404	63.216	1.476939	50
51	77.203	.627994	69.237	.537759	64.374	.471757	51
52	77.946	.619053	70.218	.529794	65.622	.466457	52
53	78.762	.609619	71.288	.521507	66.969	.461029	53
54	79.658	.599658	72.453	.512870	68.418	.455442	54
55	80.643	1.589137	73.722	1.503878	69.978	1.449674	55
56	81.721	.578003	75.099	.494476	71.651	.443648	56
57	82.905	.566227	76.598	.484655	73.447	.437335	57
58	84.201	.553741	78.221	.474329	75.367	.430617	58
59	85.624	.540512	79.985	.463526	77.424	.423490	59
60	87.185	1.526473	81.897	1.452135	79.624	1.415803	60
61	88.894	.511543	83.968	.440093	81.973	.407452	61
62	90.767	.495666	86.209	.427329	84.480	.398315	62
63	92.822	.478764	88.635	.413754	87.157	.388268	63
64	95.070	.460703	91.258	.399238	90.014	.377135	64
65	97.534	.441409	94.093	.383658	93.062	.364752	65

$$\text{FORMULA, } P_x = 1000 \left\{ \frac{M_x - M_{x+m} + D_{x+m}}{N_x - N_{x+10}} \right\} = \frac{A_x^{(m)}}{1 + a_x^9}.$$

TABLE LX. *149

TEN **ANNUAL** PREMIUM (P), ALSO λ (P — π), FOR ENDOWMENT INSURANCE OF 1,000 PAYABLE AT DEATH OR AT THE END OF *m* YEARS.

4 PER CENT.

AGE.	30.		35.		40.		AGE.
	P.	λ (P — π).	P.	λ (P — π).	P.	λ (P — π).	
15	44.122	1.523169	38.956	1.450095	34.990	1.384237	15
16	44.194	.521124	39.057	.448114	35.127	.382584	16
17	44.274	.519013	39.169	.446104	35.278	.380957	17
18	44.362	.516833	39.290	.444056	35.442	.379355	18
19	44.459	.514582	39.424	.441976	35.622	.377787	19
20	44.565	1.512267	39.571	1.439877	35.820	1.376278	20
21	44.681	.509880	39.731	.437760	36.035	.374833	21
22	44.808	.507425	39.906	.435626	36.269	.373455	22
23	44.948	.504910	40.099	.433496	36.526	.372179	23
24	45.101	.502328	40.308	.431367	36.805	.371008	24
25	45.269	1.499686	40.538	1.429258	37.109	1.369963	25
26	45.453	.496993	40.790	.427181	37.441	.369069	26
27	45.654	.494238	41.063	.425131	37.800	.368328	27
28	45.875	.491442	41.362	.423140	38.191	.367770	28
29	46.117	.488608	41.689	.421222	38.616	.367421	29
30	46.379	1.485723	42.043	1.419366	39.074	1.367263	30
31	46.667	.482818	42.430	.417615	39.571	.367350	31
32	46.982	.479895	42.850	.415977	40.108	.367691	32
33	47.327	.476963	43.307	.414470	40.688	.368294	33
34	47.702	.474033	43.804	.413112	41.313	.369173	34
35	48.112	1.471107	44.341	1.411908	41.984	1.370324	35
36	48.556	.468193	44.922	.410868	42.703	.371747	36
37	49.041	.465316	45.541	.409858	43.475	.373458	37
38	49.569	.462496	46.230	.409390	44.301	.375458	38
39	50.142	.459726	46.963	.408964	45.182	.377712	39
40	50.764	1.457022	47.750	1.408741	46.120	1.380204	40
41	51.437	.454392	48.596	.408730	47.116	.382904	41
42	52.168	.451863	49.504	.408944	48.174	.385801	42
43	52.956	.449417	50.475	.409344	49.291	.388829	43
44	53.808	.447077	51.513	.409933	50.471	.391960	44
45	54.727	1.444843	52.620	1.410688	51.715	1.395134	45
46	55.715	.442699	53.798	.411560	53.021	.398287	46
47	56.778	.440651	55.049	.412525	54.393	.401363	47
48	57.918	.438669	56.374	.413523	55.828	.404288	48
49	59.140	.436753	57.776	.414515	57.330	.407009	49
50	60.446	1.434853	59.255	1.415426	58.899	1.409433	50
51	61.841	.432953	60.815	.416198	60.536	.411521	51
52	63.326	.430981	62.456	.416730	62.243	.413174	52
53	64.907	.428896	64.179	.416959	64.021	.414331	53
54	66.586	.426630	65.988	.416797	65.876	.414920	54
55	68.369	1.424120	67.887	1.416166	67.810	1.414878	55
56	70.255	.421252	69.875	.414943	69.824	.414104	56
57	72.252	.417951	71.959	.413074	71.928	.412545	57
58	74.359	.414073	74.144	.410457	74.126	.410143	58
59	76.589	.409583	76.431	.406912	76.421	.406736	59
60	78.943	1.404301	78.834	1.402431			60
61	81.430	.398116	81.358	.396865			61
62	84.057	.390910	84.011	.390105			62
63	86.837	.382544	86.810	.382053			63
64	89.779	.372844	89.764	.372557			64
65	92.898	.361648					65

TABLE LXI.

LIMITED OR m ANNUAL PREMIUMS (P), ALSO $\lambda\,(P - \pi)$, FOR LIFE POLICIES OF 1,000.

4 PER CENT.

AGE.	$m = 5$.		10.	15.		20.		AGE.
x.	P.	$\lambda\,(P - \pi)$.	P.	P.	$\lambda\,(P - \pi)$.	P.	$\lambda\,(P - \pi)$.	x.
15	47.841	1.569080	26.657	19.725	0.952279	16.357	0.747458	15
16	48.636	.575656	27.103	20.057	.957224	16.634	.751210	16
17	49.465	.582385	27.568	20.404	.962251	16.925	.754982	17
18	50.327	.589248	28.051	20.765	.967323	17.227	.758723	18
19	51.224	.596246	28.555	21.141	.972434	17.543	.762431	19
20	52.158	1.603385	29.079	21.533	0.977591	17.872	0.766115	20
21	53.129	.610649	29.625	21.942	.982773	18.215	.769739	21
22	54.139	.618034	30.193	22.367	.987966	18.573	.773296	22
23	55.188	.625547	30.784	22.810	.993176	18.947	.776774	23
24	56.279	.633170	31.398	23.271	.998377	19.336	.780144	24
25	57.412	1.640910	32.038	23.751	1.003564	19.742	0.783410	25
26	58.590	.648762	32.703	24.252	.008732	20.166	.786546	26
27	59.810	.656696	33.393	24.772	.013840	20.607	.789489	27
28	61.079	.664734	34.111	25.314	.018900	21.067	.792273	28
29	62.395	.672861	34.857	25.878	.023891	21.548	.794857	29
30	63.757	1.681044	35.631	26.464	1.028767	22.048	0.797184	30
31	65.171	.689305	36.435	27.074	.033544	22.570	.799272	31
32	66.636	.697631	37.270	27.710	.038195	23.115	.801067	32
33	68.154	.706006	38.136	28.371	.042690	23.684	.802534	33
34	69.726	.714424	39.036	29.058	.047022	24.278	.803655	34
35	71.352	1.722864	39.969	29.774	1.051141	24.897	0.804364	35
36	73.032	.731309	40.935	30.517	.055026	25.544	.804637	36
37	74.771	.739775	41.938	31.292	.058665	26.220	.804432	37
38	76.569	.748241	42.979	32.098	.062044	26.926	.803723	38
39	78.426	.756679	44.057	32.937	.065094	27.665	.802425	39
40	80.342	1.765086	45.174	33.810	1.067800	28.437	0.800490	40
41	82.319	.773437	46.331	34.719	.070119	29.246	.797884	41
42	84.361	.781742	47.532	35.667	.072033	30.093	.794523	42
43	86.463	.789955	48.775	36.653	.073469	30.981	.790341	43
44	88.631	.798083	50.063	37.682	.074407	31.912	.785266	44
45	90.864	1.806100	51.398	38.755	1.074798	32.891	0.779236	45
46	93.162	.813987	52.781	39.875	.074582	33.919	.772138	46
47	95.527	.821727	54.214	41.045	.073707	35.001	.763885	47
48	97.960	.829300	55.700	42.267	.072118	36.141	.754371	48
49	100.461	.836691	57.241	43.545	.069761	37.343	.743502	49
50	103.031	1.843872	58.839	44.884	1.066531	38.613	0.731121	50
51	105.672	.850829	60.498	46.287	.062413	39.956	.717154	51
52	108.382	.857524	62.219	47.760	.057275	41.378	.701387	52
53	111.165	.863946	64.008	49.307	.051033	42.887	.683659	53
54	114.022	.870073	65.868	50.936	.043625	44.490	.663842	54
55	116.957	1.875879	67.806	52.653	1.034937	46.198	0.641682	55
56	119.965	.881320	69.822	54.464	.024810	48.016	.616969	56
57	123.054	.886386	71.927	56.381	.013174	49.959	.589480	57
58	126.221	.891022	74.124	58.410	0.999852	52.035	.558900	58
59	129.472	.895215	76.421	60.564	.984707	54.259	.524954	59
60	132.811	1.898927	78.829	62.855	0.967553	56.646	0.487280	60
61	136.241	.902120	81.355	65.296	.948227	59.209	.445480	61
62	139.764	.904747	84.010	67.901	.926461	61.965	.399033	62
63	143.391	.906781	86.809	70.689	.902085	64.934	.347603	63
64	147.124	.908167	89.764	73.679	.874801	68.135	.290458	64
65	150.971	.908858	92.889	76.889	.844309	71.588	.226806	65

FORMULA, $\quad P_x = 1000\,\dfrac{M_x}{N_x - N_{x+m}} = \dfrac{A_x}{1 + a_x^{m-1}}.$

TABLE LXII.

NET VALUE OR RESERVE ON TEN PAYMENT LIFE POLICIES OF 1,000.

4 PER CENT.

Age of Entry.	1st Year.			2d Year.			3d Year.			Age of Entry.
	6m.	12m.	½m.d.	6m.	12m.	½m.d.	6m.	12m.	½m.d.	
15	23.965	21.272	.224	45.724	43.520	.184	68.478	66.779	.142	15
16	24.409	21.716	.224	46.619	44.418	.183	69.838	68.154	.140	16
17	24.869	22.169	.225	47.541	45.346	.183	71.247	69.580	.139	17
18	25.346	22.642	.225	48.504	46.315	.182	72.712	71.059	.138	18
19	25.845	23.135	.226	49.503	47.316	.182	74.231	72.590	.137	19
20	26.360	23.641	.227	50.535	48.349	.182	75.804	74.180	.135	20
21	26.896	24.166	.228	51.609	49.427	.182	77.439	75.826	.134	21
22	27.454	24.715	.228	52.724	50.541	.182	79.133	77.532	.133	22
23	28.030	25.277	.229	53.877	51.692	.182	80.887	79.299	.132	23
24	28.631	25.863	.231	55.076	52.891	.182	82.706	81.122	.132	24
25	29.255	26.472	.232	56.314	54.119	.183	84.583	83.010	.131	25
26	29.895	27.088	.234	57.591	55.390	.183	86.527	84.961	.131	26
27	30.566	27.739	.236	58.923	56.715	.184	88.539	86.969	.131	27
28	31.259	28.407	.238	60.290	58.062	.186	90.606	89.040	.130	28
29	31.969	29.080	.241	61.696	59.454	.187	92.744	91.177	.131	29
30	32.712	29.793	.243	63.164	60.904	.188	94.962	93.389	.131	30
31	33.479	30.524	.246	64.674	62.390	.190	97.244	95.662	.132	31
32	34.272	31.273	.250	66.231	63.918	.193	99.591	97.994	.133	32
33	35.090	32.044	.254	67.832	65.485	.196	102.000	100.380	.135	33
34	35.934	32.832	.258	69.475	67.082	.199	104.478	102.837	.137	34
35	36.801	33.633	.264	71.168	68.733	.203	107.032	105.363	.139	35
36	37.704	34.473	.269	72.922	70.437	.207	109.663	107.954	.142	36
37	38.633	35.328	.275	74.717	72.167	.213	112.351	110.597	.146	37
38	39.585	36.192	.283	76.551	73.932	.218	115.100	113.288	.151	38
39	40.568	37.079	.291	78.434	75.731	.225	117.919	116.050	.156	39
40	41.576	37.977	.300	80.364	77.577	.232	120.802	118.854	.162	40
41	42.621	38.912	.309	82.347	79.452	.241	123.752	121.720	.169	41
42	43.685	39.837	.321	84.360	81.351	.251	126.751	124.620	.178	42
43	44.784	40.794	.333	86.429	83.288	.262	129.818	127.572	.187	43
44	45.910	41.756	.346	88.531	85.244	.274	132.931	130.556	.198	44
45	47.063	42.729	.361	90.675	87.222	.288	136.095	133.570	.210	45
46	48.247	43.713	.378	92.855	89.217	.303	139.307	136.616	.224	46
47	49.458	44.701	.396	95.072	91.229	.320	142.561	139.679	.240	47
48	50.701	45.702	.417	97.326	93.250	.340	145.856	142.762	.258	48
49	51.968	46.696	.439	99.606	95.275	.361	149.179	145.841	.278	49
50	53.269	47.699	.464	101.918	97.297	.385	152.529	148.922	.301	50
51	54.593	48.688	.492	104.247	99.309	.411	155.900	151.994	.326	51
52	55.949	49.678	.523	106.608	101.319	.441	159.298	155.058	.353	52
53	57.336	50.665	.556	108.995	103.317	.473	162.703	158.080	.385	53
54	58.755	51.641	.593	111.391	105.273	.510	166.102	161.064	.420	54
55	60.194	52.583	.634	113.792	107.195	.550	169.489	163.977	.459	55
56	61.673	53.524	.679	116.210	109.074	.595	172.867	166.838	.502	56
57	63.173	54.418	.730	118.620	110.895	.644	176.221	169.620	.550	57
58	64.713	55.302	.784	121.053	112.680	.698	179.563	172.321	.603	58
59	66.289	56.158	.844	123.486	114.392	.758	183.858	174.904	.663	59
60	67.898	56.967	.911	125.902	116.008	.825	186.106	177.374	.728	60
61	69.541	57.726	.985	128.316	117.552	.897	189.308	179.709	.800	61
62	71.236	58.463	1.064	130.741	119.008	.978	192.458	181.898	.880	62
63	72.972	59.134	1.153	133.141	120.340	1.067	195.525	183.901	.969	63
64	74.756	59.748	1.251	135.531	121.549	1.165	198.523	185.734	1.066	64
65	76.592	60.295	1.358	137.914	122.644	1.272	201.446	187.359	1.174	65

TABLE LXII.

NET VALUE OR RESERVE ON TEN PAYMENT LIFE POLICIES OF 1,000.

4 PER CENT.

Age of Entry.	4th Year.			5th Year.			6th Year.			Age of Entry.
	6m.	12m.	½m.d.	6m.	12m.	½m.d.	6m.	12m.	½m.d.	
15	92.268	91.100	.097	117.145	116.533	.051	143.157	143.124	.003	15
16	94.116	92.974	.095	119.500	118.923	.048	146.039	146.052	.001	16
17	96.031	94.914	.093	121.939	121.397	.045	149.028	149.091	.005	17
18	98.017	96.925	.091	124.474	123.971	.042	152.133	152.243	.009	18
19	100.080	99.015	.089	127.102	126.635	.039	155.350	155.510	.013	19
20	102.218	101.177	.087	129.826	129.396	.036	158.687	158.899	.018	20
21	104.434	103.417	.085	132.652	132.261	.033	162.144	162.402	.022	21
22	106.735	105.744	.083	135.579	135.221	.030	165.724	166.034	.026	22
23	109.112	108.141	.081	138.605	138.286	.027	169.432	169.794	.030	23
24	111.573	110.627	.079	141.743	141.461	.024	173.265	173.671	.034	24
25	114.124	113.199	.077	144.983	144.729	.021	177.224	177.681	.038	25
26	116.752	115.840	.076	148.325	148.107	.018	181.317	181.824	.042	26
27	119.470	118.578	.074	151.787	151.602	.015	185.549	186.104	.046	27
28	122.275	121.400	.073	155.357	155.203	.013	189.915	190.515	.050	28
29	125.171	124.308	.072	159.039	158.913	.010	194.414	195.059	.054	29
30	128.167	127.313	.071	162.842	162.740	.009	199.053	199.734	.057	30
31	131.248	130.399	.071	166.749	166.664	.007	203.824	204.550	.060	31
32	134.412	133.560	.071	170.768	170.706	.005	208.739	209.502	.064	32
33	137.666	136.816	.071	174.906	174.860	.004	213.791	214.585	.066	33
34	141.016	140.160	.071	179.157	179.119	.003	218.977	219.800	.069	34
35	144.460	143.587	.073	183.522	183.487	.003	224.299	225.142	.070	35
36	147.996	147.104	.074	187.999	187.960	.003	229.761	230.627	.072	36
37	151.612	150.688	.077	192.583	192.539	.004	235.350	236.223	.073	37
38	155.312	154.358	.079	197.271	197.206	.005	241.064	241.943	.073	38
39	159.102	158.096	.084	202.065	201.977	.007	246.908	247.781	.073	39
40	162.970	161.912	.088	206.961	206.835	.010	252.869	253.730	.072	40
41	166.924	165.798	.094	211.956	211.784	.014	258.952	259.788	.070	41
42	170.945	169.737	.101	217.037	216.804	.019	265.135	265.934	.067	42
43	175.044	173.741	.109	222.209	221.902	.026	271.428	272.179	.063	43
44	179.204	177.789	.118	227.457	227.063	.033	277.812	278.498	.057	44
45	183.426	181.884	.129	232.781	232.279	.042	284.283	284.890	.051	45
46	187.705	186.014	.141	238.169	237.543	.052	290.831	291.338	.042	46
47	192.034	190.174	.155	243.613	242.839	.065	297.442	297.831	.032	47
48	196.406	194.350	.171	249.106	248.162	.079	304.112	304.362	.021	48
49	200.806	198.530	.190	254.634	253.497	.095	310.827	310.916	.007	49
50	205.238	202.715	.210	260.197	258.839	.113	317.571	317.464	.009	50
51	209.691	206.890	.233	265.770	264.153	.135	324.326	324.000	.027	51
52	214.154	211.032	.260	271.348	269.444	.159	331.080	330.497	.049	52
53	218.614	215.139	.290	276.911	274.676	.186	337.812	336.940	.073	53
54	223.054	219.177	.323	282.442	279.839	.217	344.509	343.311	.100	54
55	227.461	223.138	.360	287.929	284.914	.251	351.148	349.577	.131	55
56	231.845	227.030	.401	293.372	289.891	.290	357.717	355.720	.166	56
57	236.176	230.806	.447	298.726	294.720	.334	364.181	361.716	.205	57
58	240.453	234.461	.499	304.002	299.418	.382	370.545	367.548	.250	58
59	244.654	237.982	.556	309.170	303.938	.436	376.764	373.168	.300	59
60	248.770	241.338	.619	314.208	308.248	.497	382.812	378.548	.355	60
61	252.785	244.505	.690	319.091	312.323	.564	388.672	383.666	.417	61
62	256.687	247.467	.768	323.817	316.156	.638	394.325	388.484	.487	62
63	260.456	250.201	.855	328.348	319.687	.722	399.742	392.987	.563	63
64	264.089	252.680	.951	332.690	322.936	.813	404.905	397.110	.650	64
65	267.582	254.917	1.055	336.816	325.825	.916	409.779	400.845	.745	65

TABLE LXII. *153

NET VALUE OR RESERVE ON TEN PAYMENT LIFE POLICIES OF 1,000.

4 PER CENT.

Age of Entry.	7th Year.			8th Year.			9th Year.*			Age of Entry.
	6m.	12m.	½m.d.	6m.	12m.	½m.d.	6m.	12m.	½m.d.	
15	170.354	170.927	.048	198.794	200.004	.101	228.535	230.408	.156	15
16	173.789	174.422	.053	202.805	204.084	.107	233.143	235.100	.163	16
17	177.351	178.043	.058	206.963	208.315	.113	237.928	239.972	.170	17
18	181.047	181.800	.063	211.280	212.709	.119	242.889	245.018	.177	18
19	184.882	185.700	.068	215.755	217.255	.125	248.030	250.251	.185	19
20	188.855	189.732	.073	220.390	221.969	.132	253.363	255.677	.193	20
21	192.970	193.912	.079	225.196	226.855	.138	258.882	261.284	.200	21
22	197.235	198.244	.084	230.169	231.902	.144	264.593	267.091	.208	22
23	201.646	202.713	.089	235.311	237.125	.151	270.505	273.102	.216	23
24	206.203	207.338	.095	240.633	242.530	.158	276.622	279.316	.225	24
25	210.920	212.121	.100	246.136	248.113	.165	282.943	285.735	.233	25
26	215.792	217.057	.105	251.819	253.878	.172	289.472	292.363	.241	26
27	220.826	222.155	.111	257.688	259.828	.178	296.208	299.195	.249	27
28	226.017	227.409	.116	263.737	265.953	.185	303.156	306.248	.258	28
29	231.365	232.813	.121	269.971	272.273	.192	310.323	313.516	.266	29
30	236.878	238.391	.126	276.404	278.785	.198	317.708	320.999	.274	30
31	242.557	244.129	.131	283.022	285.480	.205	325.307	328.699	.283	31
32	248.398	250.024	.135	289.828	292.363	.211	333.121	336.609	.291	32
33	254.400	256.079	.140	296.821	299.427	.217	341.153	344.743	.299	33
34	260.560	262.285	.144	304.003	306.684	.223	349.401	353.083	.307	34
35	266.885	268.658	.148	311.372	314.117	.229	357.863	361.639	.315	35
36	273.370	275.179	.151	318.925	321.736	.234	366.537	370.403	.322	36
37	280.007	281.852	.154	326.658	329.527	.239	375.418	379.371	.329	37
38	286.793	288.665	.156	334.566	337.488	.244	384.502	388.537	.336	38
39	293.729	295.620	.158	342.646	345.615	.247	393.784	397.896	.343	39
40	300.807	302.709	.159	350.891	353.898	.251	403.258	407.444	.349	40
41	308.022	309.926	.159	359.297	362.337	.253	412.918	417.169	.354	41
42	315.362	317.257	.158	367.850	370.911	.255	422.753	427.062	.359	42
43	322.827	324.700	.156	376.548	379.622	.256	432.755	437.114	.363	43
44	330.401	332.241	.153	385.377	388.450	.256	442.913	447.313	.367	44
45	338.077	339.866	.149	394.325	397.385	.255	453.216	457.648	.369	45
46	345.842	347.566	.144	403.381	406.416	.253	463.653	468.109	.371	46
47	353.687	355.328	.137	412.538	415.533	.250	474.207	478.668	.372	47
48	361.602	363.142	.128	421.773	424.705	.244	484.862	489.319	.371	48
49	369.566	370.975	.117	431.071	433.925	.238	495.601	500.036	.370	49
50	377.563	378.824	.105	440.415	443.167	.229	506.405	510.803	.366	50
51	385.577	386.656	.090	449.782	452.411	.219	517.257	521.605	.362	51
52	393.588	394.459	.073	459.162	461.645	.207	528.140	532.417	.356	52
53	401.582	402.216	.053	468.531	470.838	.192	539.026	543.206	.348	53
54	409.537	409.895	.030	477.859	479.955	.175	549.892	553.961	.339	54
55	417.420	417.458	.003	487.124	488.984	.155	560.721	564.652	.328	55
56	425.224	424.906	.026	496.313	497.898	.132	571.484	575.247	.314	56
57	432.919	432.195	.060	505.387	506.653	.105	582.148	585.716	.297	57
58	440.485	439.297	.099	514.323	515.225	.075	592.693	596.038	.279	58
59	447.881	446.174	.142	523.091	523.587	.041	603.093	606.177	.257	59
60	455.090	452.802	.191	531.660	531.689	.002	613.315	616.112	.233	60
61	462.076	459.132	.245	540.006	539.524	.040	623.336	625.793	.205	61
62	468.830	465.165	.305	548.100	547.026	.090	633.118	635.201	.174	62
63	475.305	470.815	.374	555.898	554.171	.144	642.635	644.290	.138	63
64	481.476	476.078	.450	563.376	560.911	.205	651.853	653.031	.098	64
65	487.316	480.897	.535	570.499	567.212	.274	660.750	661.399	.054	65

* NOTE.   The last Premium at the beginning of the 10th Year changes the Policy to the Paid-up class.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.
INTEREST, 4 PER CENT.

I. COMMON LIFE POLICIES.—The Net Value or Reserve is already computed in the column (V, 6m.) for the *middle* of each Policy Year, and in the column (V, 12m.) for the *end* of each Policy Year, when the next Annual Premium is just due and unpaid. For any other time of year, a correction derived from the column of half monthly or 15 days difference ($\frac{1}{2}$ m. d.) is to be added or subtracted, according as the Reserve is increasing or decreasing in the direction of the given interval.

For example, if the Age of Entry, x, of a common Life Policy of $1000 be 35 years, the 4 per cent. Reserve at the middle of the 24th Policy Year (V_{35}^{23}, 6m.) is given $362.47, and at the end of the same Policy Year, $362.37. Hence, at the end of 3 months in the same year, the Reserve is $362.52, and at the end of the 9th month, $362.42.

$$\text{FORMULAS,} \quad (V, 12\text{m.}) = 1000 \left\{ 1 - \frac{1 + a_{x+n}}{1 + a_x} \right\}. \qquad \pi_x = \frac{1000 M_x}{N_x}.$$

$$(V, 6\text{m.}) = \tfrac{1}{2} \left\{ (V_x^{n-1}, 12\text{m.}) + \pi_x + (V_x^n, 12\text{m.}) \right\}. \qquad B_x^n = \frac{N_x - N_{x+n}}{D_{x+n}}.$$

II. GENERAL VALUATION.—For Endowment Insurances and all other Annual Premium Policies, the Reserve V is first found from the Table, and corrected for the elapsed fraction of a year, when required, as if for a common Life Policy. The remaining part and process is thus indicated:

GENERAL FORMULA, $\text{Reserve} = V + (P_x - \pi_x) \cdot B_x^n \cdot f_{x+n}^h.$

Middle of Policy Year, $\text{Reserve} = (V, 6\text{m.}) + (P_x - \pi_x) \cdot (Bf)_x^n.$

End   "   "   " $\text{Reserve} = (V, 12\text{m.}) + (P_x - \pi_x) \cdot B_x^n.$

Pure Endowment, $\text{Reserve} = \dfrac{1000}{B_x^{n+m}} \cdot B_x^n \cdot f_{x+n}^h.$

Here $n + m$ denotes the expired (n) added to the unexpired (m) years of the whole period of simple endowment. In all cases,

$x =$ the Age of Entry or of original Insurance.
$h =$ fraction elapsed of the current Policy Year.
$f = h + (1 - h) \, vp_{x+n-1}$,   Table LXIV.

At 12 months, or the end of the year, $f = 1$, since $h = 1$.

EXAMPLE 1. *End of the Year.*—A Ten Premium Endowment Insurance of $1000, payable at Death or Age 50, is contracted at the Age of 30. Required the Net Value at the end of the 9th Year.

$x = 30$; $n + h = 8$ yrs. 12m. $1.648805 = \lambda (P - \pi)$,   Table LVII.

    $V = $ 92.685, $1.060738 = \lambda B_{30}^8$,   Table LXIII.

     $+ 512.322 \dots 2.709543$ Sum.   Table LXXXII.

    $\text{Reserve} = \overline{\$605.007}$ on $1000 Insured.

EXAMPLE 2. *Intermediate Months and Term Policies.*—An Insurance of $1000 is entered at the age of 38, for the Term of 7 years. Required the Net Value at the end of 4 years and 8$\frac{1}{2}$ months (5th year).

$x = 38$; $x + n + h = 42$ yrs. 8$\frac{1}{2}$ m. $1.05227 = \lambda (\pi - P)$,   Table LIII.

        $\overline{1.99387} = \lambda f_{43}^h$,   Table LXIV.

   Adjusted $V = $ 68.993, $0.76363 = \lambda B_{38}^4$,   Table LXIII.

     $- 64.531 \dots \overline{1.80977}$ Sum,   Table LXXXII.

    Net Value = $\overline{\$4.462}$ on $1000 Insured.

In this case, $(P - \pi)$ being negative, since P is less than π, the computed term is subtractive, which is a general characteristic of Simple *Term* Policies.

EXAMPLE 3. *Middle of the Year.*—A Fifteen Premium Insurance of $1000 for the whole Life is entered at the Age of 42. Required the Net Value at the end of 7 years and 6 months, (8th Policy Year).

     V, 6m. $1.07203 = \lambda (P - \pi)$,   Table LXI.

     133.75 $0.99521 = \lambda B$,   Table LXIII.

     $+ 116.75 \dots \overline{2.06724}$ Sum,   Table LXXXII.

    $\text{Reserve} = \$250.50$ on $1000 Insured.

NOTE 1. Five, Ten, or Limited Premium Policies can be valued by this method only till one year after the last Annual Premium is paid. After the beginning of this year, the Policy being Paid-up, the Reserve is more easily found from the proper Single Premium Table.

NOTE 2. Although six decimals are given, yet in practice five, and in many cases, four decimals will be sufficient for logarithms or anti-logarithms. Thus the last of the six decimals can generally be omitted, as in the last Examples.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	10. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	11. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	6.742	3.709	.253	0.010042	0.019857	6.914	3.875	.253	0.010046	0.019866	0
1	10.527	7.570	.246	.321118	.330938	10.873	7.917	.246	.321126	.330948	1
2	14.470	11.597	.239	.507337	.517159	14.999	12.127	.239	.507349	.517176	2
3	18.582	15.792	.233	.642484	.652311	19.293	16.505	.232	.642504	.652337	3
4	22.860	20.154	.226	.749687	.759520	23.762	21.065	.225	.749714	.759553	4
5	27.312	24.696	.218	0.839244	0.849083	28.415	25.811	.217	0.839278	0.849122	5
6	31.947	29.425	.210	.916652	.926496	33.259	30.754	.209	.916692	.926543	6
7	36.774	34.349	.202	.985188	.995039	38.301	35.893	.201	.985238	.995096	7
8	41.797	39.470	.194	1.046972	1.056830	43.543	41.240	.192	1.047033	1.056898	8
9	47.020	44.796	.185	.103449	.113314	48.995	46.796	.183	.103520	.113395	9
10	52.450	50.331	.177	1.155649	1.165524	54.659	52.568	.174	1.155734	1.165619	10
11	58.094	56.083	.168	.204335	.214220	60.545	58.568	.165	.204436	.214332	11
12	63.959	62.060	.158	.250088	.259984	66.661	64.799	.155	.250205	.260112	12
13	70.051	68.268	.149	.293356	.303263	73.010	71.267	.145	.293491	.303411	13
14	76.377	74.712	.139	.334498	.344418	79.602	77.983	.135	.334654	.344587	14
15	82.944	81.403	.128	1.373803	1.383736	86.441	84.945	.125	1.373982	1.383932	15
16	89.759	88.340	.118	.411508	.421458	93.533	92.167	.114	.411712	.421679	16
17	96.824	95.534	.108	.447810	.457777	100.888	99.655	.103	.448043	.458028	17
18	104.151	102.995	.096	.482875	.492860	108.505	107.402	.092	.483142	.493150	18
19	111.741	110.713	.086	.516846	.526854	116.392	115.428	.080	.517149	.527178	19
20	119.598	118.710	.074	1.549843	1.559872	124.559	123.736	.069	1.550184	1.560239	20
21	127.735	126.986	.062	.581968	.592023	133.012	132.333	.057	.582353	.592434	21
22	136.156	135.552	.050	.613315	.623396	141.752	141.218	.045	.613749	.623861	22
23	144.865	144.403	.039	.643964	.654076	150.786	150.399	.032	.644454	.654599	23
24	153.864	153.552	.026	.673992	.684137	160.110	159.867	.020	.674545	.684729	24
25	163.155	162.983	.014	1.703464	1.713648	169.734	169.647	.007	1.704083	1.714306	25
26	172.742	172.727	.001	.732434	.742657	179.669	179.737	.006	.733124	.743389	26
27	182.640	182.779	.012	.760957	.771222	189.911	190.132	.018	.761727	.772043	27
28	192.845	193.137	.024	.789082	.799398	200.460	200.834	.031	.789948	.800318	28
29	203.354	203.798	.037	.816861	.827231	211.315	211.842	.044	.817829	.828259	29
30	214.169	214.766	.050	1.844335	1.854765	222.486	223.175	.057	1.845413	1.855904	30
31	225.299	226.057	.063	.871543	.882034	233.965	234.802	.070	.872745	.883312	31
32	236.735	237.640	.075	.898526	.909093	245.752	246.748	.083	.899867	.910509	32
33	248.479	249.543	.089	.925325	.935967	257.850	258.997	.096	.926815	·937545	33
34	260.531	261.746	.101	.951972	.962702	270.248	271.546	.108	.953634	.964459	34
35	272.884	274.248	.114	1.978511	1.989336	282.948	284.396	.121	1.980356	1.991285	35
36	285.536	287.050	.126	2.004974	2.015903	295.942	297.534	.133	2.007025	2.018069	36
37	298.483	300.141	.138	.031403	.042447	309.222	310.957	.145	.033681	.044851	37
38	311.714	313.513	.150	.057832	.069002	322.785	324.659	.156	.060360	.071668	38
39	325.225	327.164	.162	.084301	.095609	336.618	338.622	.167	.087107	.098568	39
40	339.007	341.075	.172	2.110852	2.122313	350.708	352.840	.178	2.113964	2.125593	40
41	353.044	355.240	.183	.137527	.149156	365.047	367.300	.188	.140976	.152789	41
42	367.331	369.647	.193	.164369	.176182	379.622	381.991	.197	.168190	.180204	42
43	381.852	384.283	.203	.191422	.203436	394.422	396.898	.206	.195652	.207887	43

10.	$\pi = 9.7739.$	11.	$\pi = 9.9535.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 12.$						13.					Policy Years. n.
	V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.		V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	
0	7.100	4.058	.254	0.010050	0.019872		7.292	4.244	.254	0.010055	0.019882	0
1	11.243	8.285	.247	.321134	.330961		11.621	8.657	.247	.321147	.330980	1
2	15.553	12.680	.239	.507365	.517198		16.125	13.253	.239	.507382	.517221	2
3	20.039	17.257	.232	.642526	.652365		20.815	18.037	.232	.642549	.652393	3
4	24.711	22.022	.224	.749741	.759585		25.698	23.019	.223	.749771	.759622	4
5	29.574	26.984	.216	0.839313	0.849164		30.779	28.200	.215	0.839352	0.849210	5
6	34.634	32.143	.208	.916736	.926594		36.065	33.589	.206	.916786	.926651	6
7	39.898	37.510	.199	.985293	.995158		41.559	39.189	.197	.985353	.995228	7
8	45.370	43.088	.190	1.047098	1.056973		47.268	45.007	.188	1.047172	1.057057	8
9	51.056	48.883	.181	.103600	.113485		53.201	51.055	.179	.103687	.113583	9
10	56.966	54.906	.172	1.155828	1.165724		59.365	57.336	.169	1.155932	1.165839	10
11	63.104	61.161	.162	.204546	.214453		65.766	63.855	.159	.204667	.214587	11
12	69.479	67.654	.152	.250333	.260253		72.410	70.625	.149	.250474	.260407	12
13	76.096	74.396	.142	.293639	.303572		79.304	77.643	.138	.293803	.303753	13
14	82.962	81.386	.131	.334825	.344775		86.452	84.922	.128	.335013	.344980	14
15	90.082	88.636	.121	1.374178	1.384145		93.866	92.470	.116	1.374394	1.384379	15
16	97.465	96.153	.109	.406064	.416049		101.545	100.279	.105	.412186	.422194	16
17	105.113	103.930	.099	.448301	.458309		109.494	108.369	.094	.448586	.458615	17
18	113.030	111.988	.087	.483436	.493465		117.726	116.743	.082	.483758	.493813	18
19	121.229	120.328	.075	.517482	.527537		126.246	125.409	.070	.517846	.527927	19
20	129.714	128.958	.063	1.550559	1.560640		135.057	134.365	.058	1.550971	1.561083	20
21	138.488	137.877	.051	.582776	.592888		144.162	143.619	.045	.583243	.593388	21
22	147.557	147.094	.039	.614227	.624372		153.561	153.163	.033	.614755	.624939	22
23	156.917	156.599	.027	.644995	.655179		163.261	163.020	.020	.645589	.655812	23
24	166.579	166.417	.014	.675152	.685375		173.276	173.191	.007	.675816	.686081	24
25	176.553	176.547	.001	1.704760	1.715025		183.600	183.669	.006	1.705505	1.715821	25
26	186.836	186.982	.012	.733883	.744199		194.232	194.456	.019	.734721	.745091	26
27	197.424	197.725	.025	.762581	.772951		205.175	205.553	.032	.763519	.773949	27
28	208.322	208.777	.038	.790901	.801331		216.434	216.976	.045	.791949	.802440	28
29	219.537	220.154	.051	.818892	.829383		228.006	228.695	.057	.820062	.830629	29
30	231.060	231.825	.064	1.846599	1.857166		239.886	240.737	.071	1.847906	1.858548	30
31	242.893	243.819	.077	.874069	.884711		252.080	253.084	.084	.875524	.886254	31
32	255.038	256.115	.090	.901340	.912070		264.579	265.733	.096	.902963	.913788	32
33	267.485	268.713	.102	.928458	.939283		277.379	278.685	.109	.930262	.941191	33
34	280.234	281.612	.115	.955459	.966388		290.477	291.929	.121	.957467	.968511	34
35	293.278	294.802	.127	1.982387	1.993431		303.864	305.459	.133	1.984621	1.995791	35
36	306.610	308.277	.139	2.009283	2.020453		317.534	319.270	.145	2.011765	2.023073	36
37	320.226	322.032	.151	.036186	.047494		331.477	333.344	.156	.038944	.050405	37
38	334.111	336.049	.162	.063143	.074604		345.680	347.675	.166	.066204	.077833	38
39	348.256	350.322	.172	.090195	.101824		360.133	362.251	.176	.093591	.105404	39
40	362.652	364.839	.182	2.117388	2.129201		374.825	377.059	.186	2.121154	2.133168	40
41	377.284	379.587	.192	.144770	.156784		389.742	392.085	.195	.148942	.161177	41
42	392.140	394.552	.201	.172391	.184626		404.864	407.303	.203	.177014	.189496	42
43	407.201	409.708	.209	.200307	.212789		420.173	422.703	.211	.205430	.218178	43

12. $\pi = 10.1419.$ **13.** $\pi = 10.3400.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	14. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	15. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	7.490	4.432	.255	0.010062	0.019895	7.701	4.636	.255	0.010067	0.019906	0
1	12.013	9.047	.247	.321158	.330997	12.432	9.462	.248	.321169	.331013	1
2	16.724	13.852	.239	.507400	.517244	17.358	14.488	.239	.507417	.517268	2
3	21.627	18.855	.231	.642573	.652424	22.483	19.713	.231	.642600	.652458	3
4	26.731	24.058	.223	.749805	.759663	27.815	25.150	.222	.749841	.759706	4
5	32.038	29.470	.214	0.839395	0.849260	33.357	30.799	.213	0.839442	0.849317	5
6	37.556	35.094	.205	.916839	.926714	39.117	36.668	.204	.916898	.926783	6
7	43.289	40.937	.196	.985419	.995304	45.101	42.768	.194	.985492	.995388	7
8	49.248	47.011	.186	1.047252	1.057148	51.319	49.104	.185	1.047340	1.057247	8
9	55.439	53.318	.177	.103783	.113690	57.775	55.680	.175	.103889	.113809	9
10	61.865	59.865	.167	1.156045	1.165965	64.477	62.509	.164	1.156169	1.166102	10
11	68.539	66.664	.156	.204800	.214733	71.432	69.589	.154	.204946	.214896	11
12	75.462	73.712	.146	.250628	.260578	78.643	76.931	.143	.250798	.260765	12
13	82.641	81.022	.135	.293982	.303949	86.121	84.545	.131	.294179	.304164	13
14	90.086	88.602	.124	.335220	.345205	93.867	92.422	.120	.335448	.345456	14
15	97.797	96.444	.113	1.374633	1.384641	101.885	100.583	.108	1.374897	1.384926	15
16	105.780	104.569	.101	.412461	.422490	110.190	109.030	.097	.412760	.422815	16
17	114.048	112.979	.089	.448897	.458952	118.784	117.772	.084	.449239	.459320	17
18	122.605	121.682	.077	.484112	.494193	127.671	126.805	.072	.484499	.494611	18
19	131.452	130.675	.065	.518246	.528358	136.856	136.141	.060	.518687	.528832	19
20	140.596	139.969	.052	1.551425	1.561570	146.338	145.768	.048	1.551927	1.562111	20
21	150.035	149.553	.040	.583758	.593942	156.122	155.711	.034	.584324	.594547	21
22	159.777	159.453	.027	.615336	.625559	166.224	165.971	.021	.615971	.626236	22
23	169.835	169.668	.014	.646239	.656504	176.639	176.541	.008	.646953	.657269	23
24	180.203	180.190	.001	.676545	.686861	187.365	187.422	.005	.677350	.687720	24
25	190.881	191.024	.012	1.706326	1.716696	198.401	198.615	.018	1.707231	1.717661	25
26	201.869	202.167	.025	.735643	.746073	209.760	210.138	.031	.736654	.747145	26
27	213.177	213.639	.039	.764549	.775040	221.432	221.960	.044	.765681	.776248	27
28	224.798	225.408	.051	.793100	.803667	233.416	234.107	.058	.794368	.805010	28
29	236.728	237.501	.064	.821350	.831992	245.717	246.561	.070	.822764	.833494	29
30	248.975	249.900	.077	1.849341	1.860071	258.324	259.321	.083	1.850922	1.861747	30
31	261.526	262.604	.090	.877126	.887951	271.237	272.386	.096	.878887	.889816	31
32	274.381	275.611	.102	.904746	.915675	284.448	285.745	.108	.906709	.917753	32
33	287.535	288.911	.115	.932249	.943293	297.953	299.394	.120	.934435	.945605	33
34	300.979	302.499	.127	.959679	.970849	311.742	313.325	.132	.962110	.973418	34
35	314.708	316.369	.138	1.987078	1.998386	325.807	327.522	.143	1.989783	2.001244	35
36	328.710	330.502	.149	2.014495	2.025956	340.133	341.979	.154	2.017502	.029131	36
37	342.972	344.895	.160	.041978	.053607	354.713	356.681	.164	.045316	.057129	37
38	357.488	359.533	.170	.069572	.081385	369.533	371.619	.174	.073276	.085290	38
39	372.243	374.404	.180	.097325	.109339	384.581	386.776	.183	.101434	.113669	39
40	387.223	389.494	.189	2.125294	2.137529	399.834	402.127	.191	2.129850	2.142332	40
41	402.409	404.777	.197	.153532	.166014	415.278	417.662	.199	.158584	.171332	41
42	417.784	420.243	.205	.182103	.194851	430.888	433.348	.205	.187701	.200749	42
43	433.326	435.860	.211	.211067	.224115	446.645	449.177	.211	.217272	.230642	43

14. $\pi = 10.5480.$ **15.** $\pi = 10.7660.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 16. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	17. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	7.922	4.849	.256	0.010072	0.019916	8.155	5.073	.257	0.010079	0.019930	0
1	12.871	9.898	.248	.321182	.331033	13.329	10.349	.248	.321196	.331054	1
2	18.021	15.148	.239	.507438	.517296	18.711	15.837	.239	.507462	.517327	2
3	23.376	20.609	.231	.642630	.652495	24.307	21.540	.231	.642663	.652538	3
4	28.944	26.285	.222	.749881	.759756	30.120	27.465	.221	.749926	.759811	4
5	34.731	32.181	.213	0.839494	0.849379	36.163	33.624	.212	0.839552	0.849448	5
6	40.743	38.310	.203	.916964	.926860	42.440	40.020	.202	.917036	.926943	6
7	46.990	44.675	.193	.985573	.995480	48.958	46.660	.192	.985661	.995581	7
8	53.476	51.282	.183	1.047437	1.057357	55.725	53.554	.181	1.047544	1.057477	8
9	60.210	58.143	.172	.104004	.113937	62.745	60.701	.170	.104131	.114081	9
10	67.196	65.255	.162	1.156306	1.166256	70.026	68.114	.159	1.156456	1.166423	10
11	74.441	72.632	.151	.205106	.215073	77.575	75.800	.148	.205283	.215268	11
12	81.954	80.281	.139	.250985	.260970	85.394	83.752	.137	.251192	.261200	12
13	89.736	88.195	.128	.294397	.304405	93.489	91.991	.125	.294639	.304668	13
14	97.792	96.394	.117	.335702	.345731	101.873	100.519	.113	.335977	.346032	14
15	106.134	104.880	.105	1.375185	1.385240	110.550	109.344	.101	1.375502	1.385583	15
16	114.769	113.663	.092	.413090	.423171	119.522	118.464	.088	.413451	.423563	16
17	123.699	122.739	.080	.449613	.459725	128.794	127.888	.075	.450028	.460173	17
18	132.925	132.117	.067	.484927	.495072	138.365	137.607	.063	.485400	.495584	18
19	142.451	141.789	.055	.519175	.529359	148.245	147.646	.050	.519711	.529934	19
20	152.281	151.779	.042	1.552479	1.562702	158.443	158.004	.037	1.553083	1.563348	20
21	162.431	162.087	.029	.584944	.595209	168.957	168.675	.024	.585625	.595941	21
22	172.894	172.706	.016	.616668	.626984	179.786	179.660	.010	.617439	.627809	22
23	183.669	183.638	.003	.647741	.658111	190.928	190.960	.003	.648610	.659040	23
24	194.758	194.883	.010	.678238	.688668	202.394	202.593	.017	.679211	.689702	24
25	206.169	206.460	.024	1.708224	1.718715	214.178	214.527	.029	1.709317	1.719884	25
26	217.896	218.336	.037	.737768	.748335	226.277	226.791	.043	.738994	.749636	26
27	229.935	230.540	.050	.766929	.777571	238.696	239.364	.056	.768299	.779029	27
28	242.294	243.052	.063	.795761	.806491	251.422	252.245	.069	.797295	.808120	28
29	254.959	255.872	.076	.824322	.835147	264.458	265.435	.081	.826034	.836963	29
30	267.932	268.997	.089	1.852659	1.863588	277.797	278.922	.094	1.854571	1.865615	30
31	281.206	282.419	.101	.880825	.891869	291.429	292.701	.106	.882958	.894128	31
32	294.772	296.131	.113	.908869	.920039	305.352	306.766	.118	.911245	.922553	32
33	308.627	310.127	.125	.936840	.948148	319.550	321.098	.129	.939484	.950945	33
34	322.756	324.390	.136	.964785	.976246	334.013	335.693	.140	.967730	.979359	34
35	337.149	338.914	.147	1.992758	2.004387	348.733	350.536	.150	1.996032	2.007845	35
36	351.797	353.685	.157	2.020809	.032622	363.694	365.616	.160	2.024446	.036460	36
37	366.686	368.692	.167	.048988	.061002	378.885	380.918	.169	.053025	.065260	37
38	381.804	383.920	.176	.077349	.089584	394.285	396.416	.178	.081832	.094314	38
39	397.128	399.342	.185	.105954	.118436	409.875	412.099	.185	.110930	.123678	39
40	412.644	414.950	.192	2.134865	2.147613	425.636	427.936	.192	2.140385	2.153433	40
41	428.327	430.709	.198	.164146	.177194	441.543	443.915	.198	.170267	.183637	41
42	444.158	446.612	.205	.193867	.207237	457.584	460.017	.203	.200646	.214371	42
43	460.121	462.635	.209	.224097	.237822	473.731	476.208	.206	.231606	.245724	43

16.   π = 10.9953.   **17.**   π = 11.2364.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	18. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	19. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	8.396	5.303	.258	0.010087	0.019945	8.651	5.545	.259	0.010096	0.019961	0
1	13.806	10.818	.249	.321213	.331078	14.304	11.308	.250	.321231	.331106	1
2	19.429	16.551	.240	.507488	.517363	20.180	17.295	.240	.507516	.517401	2
3	25.274	22.506	.231	.642700	.652585	26.284	23.518	.231	.642741	.652637	3
4	31.346	28.696	.221	.749975	.759871	32.628	29.981	.221	.750030	.759937	4
5	37.655	35.125	.211	0.839615	0.849522	39.213	36.690	.210	0.839685	0.849605	5
6	44.207	41.798	.201	.917116	.927036	46.051	43.656	.200	.917202	.927135	6
7	51.007	48.727	.190	.985758	.995691	53.145	50.878	.189	.985865	.995815	7
8	58.064	55.911	.179	1.047661	1.057611	60.501	58.368	.178	1.047789	1.057756	8
9	65.381	63.361	.168	.104271	.114238	68.130	66.135	.166	.104425	.114410	9
10	72.969	71.087	.157	1.156622	1.166607	76.031	74.171	.155	1.156805	1.166813	10
11	80.829	79.080	.146	.205478	.215486	84.211	82.496	.143	.205695	.215724	11
12	88.965	87.361	.134	.251422	.261451	92.683	91.113	.131	.251671	.261726	12
13	97.392	95.932	.122	.294902	.304957	101.449	100.030	.118	.295191	.305272	13
14	106.112	104.802	.109	.336281	.346362	110.516	109.245	.106	.336613	.346725	14
15	115.130	113.969	.097	1.375850	1.385962	119.884	118.768	.093	1.376233	1.386378	15
16	124.450	123.441	.084	.413851	.423996	129.557	128.589	.081	.414292	.424476	16
17	134.071	133.210	.072	.450485	.460669	139.539	138.733	.067	.450988	.461211	17
18	144.000	143.300	.058	.485920	.496143	149.844	149.199	.054	.486489	.496754	18
19	154.250	153.710	.045	.520298	.530563	160.468	159.981	.041	.520942	.531258	19
20	164.817	164.435	.032	1.553745	1.564061	171.409	171.081	.027	1.554477	1.564847	20
21	175.701	175.477	.019	.586377	.596747	182.668	182.500	.014	.587205	.597635	21
22	186.901	186.834	.006	.618288	.628718	194.255	194.254	.000	.619219	.629710	22
23	198.425	198.527	.009	.649563	.660054	206.162	206.313	.013	.650611	.661178	23
24	210.270	210.522	.021	.680282	.690849	218.387	218.705	.026	.681462	.692104	24
25	222.430	222.848	.035	1.710520	1.721162	230.935	231.409	.040	1.711842	1.722572	25
26	234.911	235.485	.048	.740340	.751070	243.795	244.426	.053	.741823	.752648	26
27	247.704	248.432	.061	.769808	.780633	256.968	257.754	.065	.771467	.782396	27
28	260.806	261.690	.074	.798981	.809910	270.446	271.382	.078	.800838	.811882	28
29	274.212	275.245	.086	.827919	.838963	284.222	285.305	.090	.829993	.841163	29
30	287.915	289.094	.098	1.856675	1.867845	298.288	299.516	.102	1.858989	1.870297	30
31	301.907	303.231	.110	.885303	.896611	312.636	313.999	.114	.887884	.899345	31
32	316.179	317.636	.121	.913859	.925320	327.250	328.746	.125	.916736	.928365	32
33	330.715	332.305	.132	.942396	.954025	342.123	343.744	.135	.945599	.957412	33
34	345.510	347.224	.143	.970969	.982782	357.241	358.982	.145	.974533	.986547	34
35	360.547	362.381	.153	1.999634	2.011648	372.591	374.444	.154	2.003593	2.015828	35
36	375.816	377.761	.162	2.028445	.040680	388.152	390.104	.163	.032847	.045329	36
37	391.295	393.338	.170	.057468	.069950	403.906	405.951	.170	.062359	.075107	37
38	406.964	409.101	.178	.086766	.099514	419.830	421.953	.177	.092197	.105245	38
39	422.805	425.018	.184	.116406	.129454	435.904	438.100	.183	.122435	.135805	39
40	438.794	441.080	.191	2.146461	2.159831	452.113	454.370	.188	2.153143	2.166868	40
41	454.916	457.263	.196	.176999	.190724	468.428	470.730	.192	.184407	.198525	41
42	471.145	473.537	.199	.208106	.222224	484.821	487.155	.195	.216320	.230869	42
43	487.451	489.874	.202	.239874	.254423	501.270	503.629	.197	.248971	.263989	43

18. $\pi = 11.4897.$ **19.** $\pi = 11.7560.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x=20.					21.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	
0	8.915	5.795	.260	0.010105	0.019980	9.193	6.056	.261	0.010115	0.020000	0
1	14.823	11.816	.251	.321250	.331135	15.368	12.350	.252	.321271	.331167	1
2	20.963	18.073	.241	.507547	.517443	21.783	18.887	.241	.507581	.517488	2
3	27.340	24.572	.231	.642785	.652692	28.445	25.672	.231	.642834	.652754	3
4	33.963	31.318	.220	.750089	.760009	35.360	32.718	.220	.750153	.760086	4
5	40.839	38.323	.210	0.839761	0.849694	42.535	40.023	.209	0.839844	0.849794	5
6	47.972	45.586	.199	.917298	.927248	49.976	47.599	.198	.917402	.927369	6
7	55.370	53.118	.188	.985981	.995948	57.692	55.454	.186	.986110	.996095	7
8	63.041	60.928	.176	1.047932	1.057917	65.682	63.581	.175	1.048088	1.058096	8
9	70.986	69.008	.165	.104596	.114604	73.957	72.002	.163	.104784	.114813	9
10	79.212	77.380	.153	1.157008	1.167037	82.524	80.717	.151	1.157229	1.167284	10
11	87.731	86.045	.141	.205930	.215985	91.392	89.737	.138	.206189	.216270	11
12	96.546	95.012	.128	.251946	.262027	100.563	99.058	.125	.252246	.262358	12
13	105.663	104.278	.115	.295508	.305620	110.038	108.689	.112	.295859	.306004	13
14	115.085	113.855	.102	.336981	.347126	119.821	118.622	.100	.337387	.347571	14
15	124.810	123.730	.090	1.376658	1.386842	129.917	128.882	.086	1.377124	1.387347	15
16	134.848	133.930	.077	.414777	.425000	140.340	139.468	.073	.415307	.425572	16
17	145.211	144.455	.063	.451538	.461803	151.086	150.374	.059	.452142	.462458	17
18	155.894	155.297	.050	.487113	.497429	162.152	161.601	.046	.487803	.498173	18
19	166.896	166.459	.036	.521653	.532023	173.540	173.149	.033	.522437	.532867	19
20	178.218	177.941	.023	1.555284	1.565714	185.259	185.039	.018	1.556169	1.566660	20
21	189.869	189.761	.009	.588113	.598604	197.303	197.236	.006	.589113	.599680	21
22	201.842	201.888	.004	.620244	.630811	209.667	209.769	.009	.621372	.632014	22
23	214.136	214.348	.018	.651766	.662408	222.359	222.619	.022	.653034	.663764	23
24	226.754	227.124	.031	.682757	.693487	235.372	235.794	.035	.684184	.695009	24
25	239.687	240.213	.044	1.713298	1.724123	248.694	249.264	.047	1.714898	1.725827	25
26	252.932	253.615	.057	.743453	.754382	262.321	263.048	.061	.745248	.756292	26
27	266.485	267.319	.070	.773293	.784337	276.254	277.130	.073	.775303	.786473	27
28	280.337	281.319	.082	.802880	.814050	290.482	291.505	.085	.805126	.816434	28
29	294.482	295.610	.094	.832273	.843581	304.994	306.152	.097	.834784	.846245	29
30	308.910	310.173	.105	1.861535	1.872996	319.775	321.068	.108	1.864338	1.875967	30
31	323.606	325.003	.116	.890725	.902354	334.818	336.239	.118	.893850	.905663	31
32	338.562	340.085	.127	.919901	.931714	350.110	351.651	.128	.923383	.935397	32
33	353.764	355.408	.137	.949123	.961137	365.635	367.289	.138	.952997	.965232	33
34	369.200	370.956	.146	.978450	.990685	381.374	383.128	.146	.982763	.995245	34
35	384.848	386.703	.155	2.007951	2.020433	397.307	399.157	.154	2.012748	2.025496	35
36	400.689	402.639	.162	.037692	.050440	413.415	415.342	.161	.043024	.056072	36
37	416.702	418.730	.169	.067741	.080789	429.672	431.673	.167	.073668	.087038	37
38	432.867	434.967	.175	.098175	.111545	446.067	448.130	.172	.104750	.118475	38
39	449.165	451.328	.180	.129065	.142790	462.568	464.677	.176	.136361	.150479	39
40	465.572	467.779	.184	2.160496	2.174614	479.148	481.289	.178	2.168593	2.183142	40
41	482.055	484.295	.187	.192564	.207113	495.786	497.952	.180	.201539	.216557	41
42	498.596	500.861	.189	.225357	.240375	512.452	514.623	.181	.235303	.250842	42
43	515.166	517.436	.189	.258982	.274521	529.117	531.281	.180	.270003	.286112	43
	20.		$\pi = 12.0361.$			**21.**		$\pi = 12.3304.$			

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	22.					23.					Policy Years. n.
	V. 6m.	V. 12m.	½ m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½ m.d.	λ(Bf). 6m.	λB. 12m.	
0	9.487	6.333	.263	0.010126	0.020022	9.792	6.619	.264	0.010138	0.020045	0
1	15.941	12.909	.253	.321294	.331201	16.537	13.489	.254	.321320	.331240	1
2	22.642	19.736	.242	.507619	.517539	23.539	20.623	.243	.507659	.517592	2
3	29.601	26.825	.231	.642886	.652819	30.804	28.018	.232	.642946	.652896	3
4	36.819	34.174	.220	.750225	760175	38.336	35.689	.221	.750303	.760270	4
5	44.305	41.796	.209	0.839936	0.849903	46.149	43.643	.209	0.840037	0.850022	5
6	52.068	49.699	.197	.917517	.927502	54.241	51.872	.197	.917645	.927653	6
7	60.107	57.876	.186	.986253	.996261	62.618	60.398	.185	.986411	.996440	7
8	68.432	66.348	.174	1.048262	1.058291	71.293	69.222	.173	1.048451	1.058506	8
9	77.053	75.117	.161	.104989	.115044	80.271	78.354	.160	.105215	.115296	9
10	85.974	84.191	.149	1.157471	1.167552	89.556	87.792	.147	1.157737	1.167849	10
11	95.199	93.568	.136	.206473	.216585	99.151	97.544	.134	.206786	.216931	11
12	104.734	103.259	.123	.252579	.262724	109.055	107.601	.121	.252947	.263131	12
13	114.575	113.252	.110	.296246	.306430	119.278	117.989	.107	.296672	.306895	13
14	124.733	123.574	.097	.337834	.348057	129.831	128.707	.094	.338322	.348587	14
15	135.220	134.225	.083	1.377634	1.387899	140.711	139.749	.080	1.378193	1.388509	15
16	146.031	145.197	.070	.415889	.426205	151.916	151.117	.067	.416533	.426903	16
17	157.164	156.492	.056	.452809	.463179	163.447	162.810	.053	.453544	.463974	17
18	168.622	168.112	.042	.488563	.498993	175.312	174.848	.039	.489397	.499888	18
19	180.413	180.073	.028	.523297	.533788	187.505	187.197	.026	.524243	.534810	19
20	192.529	192.345	.015	1.557142	1.567709	200.026	199.888	.012	1.558215	1.568857	20
21	204.969	204.954	.001	.590214	.600856	212.876	212.898	.002	.591423	.602153	21
22	217.738	217.882	.012	.622611	.633341	226.046	226.228	.015	.623977	.634802	22
23	230.825	231.128	.025	.654431	.665256	239.535	239.877	.028	.655966	.666895	23
24	244.229	244.690	.038	.685753	.696682	253.338	253.833	.041	.687479	.698523	24
25	257.944	258.558	.051	1.716659	1.727703	267.445	268.091	.054	1.718597	1.729767	25
26	271.962	272.726	.064	.747223	.758393	281.851	282.645	.066	.749394	.760702	26
27	286.277	287.188	.076	.777512	.788820	296.544	297.476	.078	.779944	.791405	27
28	300.877	301.925	.087	.807598	.819059	311.510	312.579	.089	.810319	.821948	28
29	315.748	316.932	.099	.837546	.849175	326.742	327.938	.100	.840586	.852399	29
30	330.883	332.194	.109	1.867421	1.879234	342.223	343.543	.110	1.870813	1.882827	30
31	346.268	347.701	.119	.897288	.909302	357.944	359.378	.120	.901068	.913303	31
32	361.888	363.435	.129	.927211	.939446	373.879	375.414	.128	.931424	.943906	32
33	377.722	379.370	.137	.957261	.969743	390.012	391.644	.136	.961956	.974704	33
34	393.753	395.496	.145	.987510	2.000258	406.320	408.031	.143	.992735	2.005783	34
35	409.958	411.780	.152	2.018029	2.031077	422.782	424.567	.149	2.023842	2.037212	35
36	426.316	428.211	.158	.048896	.062266	439.381	441.229	.154	.055353	.069078	36
37	442.809	444.767	.163	.080185	.093910	456.089	457.983	.158	.087359	.101477	37
38	459.411	461.415	.167	.111987	.126105	472.876	474.803	.161	.119955	.134504	38
39	476.092	478.129	.170	.144395	.158944	489.722	491.674	.163	.153236	.168254	39
40	492.831	494.893	.172	2.177503	2.192521	506.597	508.554	.163	2.187309	2.202848	40
41	509.599	511.666	.172	.211417	.226956	523.469	525.419	.162	.222292	.238401	41
42	526.366	528.425	.172	.246253	.262362	540.309	542.232	.160	.258311	.275049	42
43	543.098	545.131	.169	.282139	.298877	557.069	558.941	.156	.295499	.312921	43

22. $\pi = 12.6399$ **23.** $\pi = 12.9656$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 24.					25.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	10.112	6.916	.266	0.010152	0.020072	10.450	7.231	.268	0.010167	0.020100	0
1	17.161	14.097	.255	.321348	.331281	17.814	14.728	.257	.321380	.331330	1
2	24.473	21.542	.244	.507704	.517654	25.450	22.504	.246	.507754	.517721	2
3	32.057	29.264	.233	.643009	.652976	33.370	30.567	.234	.643080	.653065	3
4	39.922	37.271	.221	.750390	.760375	41.572	38.908	.222	.750486	.760494	4
5	48.067	45.555	.209	0.840150	0.850158	50.064	47.550	.209	0.840275	0.850304	5
6	56.500	54.137	.197	.917787	.927816	58.857	56.495	.197	.917941	.927996	6
7	65.233	63.021	.184	.986583	.996638	67.958	65.752	.184	.986772	.996853	7
8	74.271	72.214	.171	1.048659	1.058740	77.370	75.319	.171	1.048886	1.058998	8
9	83.618	81.714	.159	.105462	.115574	87.096	85.205	.158	.105735	.115880	9
10	93.277	91.531	.146	1.158031	1.168176	97.137	95.399	.145	1.158357	1.168541	10
11	103.247	101.655	.133	.207134	.217318	107.498	105.929	.131	.207515	.217738	11
12	113.537	112.112	.119	.253351	.263574	118.196	116.794	.117	.253793	.264058	12
13	124.161	122.902	.105	.297138	.307403	129.225	127.987	.103	.297648	.307964	13
14	135.114	134.018	.091	.338857	.349173	140.583	139.510	.089	.339450	.349820	14
15	146.394	145.461	.078	1.378811	1.389181	152.271	151.363	.076	1.379493	1.389923	15
16	158.000	157.232	.064	.417242	.427672	164.299	163.565	.061	.418019	.428510	16
17	169.945	169.350	.050	.454350	.464841	176.659	176.084	.048	.455238	.465805	17
18	182.220	181.782	.036	.490314	.500881	189.350	188.947	.034	.491325	.501967	18
19	194.824	194.557	.022	.525285	.535927	202.376	202.136	.020	.526430	.537160	19
20	207.759	207.654	.009	1.559392	1.570122	215.726	215.648	.007	1.560689	1.571514	20
21	221.018	221.073	.005	.592756	.603581	229.400	229.483	.007	.594219	.605148	21
22	234.596	234.812	.018	.625477	.636406	243.391	243.630	.020	.627129	.638173	22
23	248.491	248.861	.031	.657656	.668700	257.691	258.083	.033	.659516	.670686	23
24	262.692	263.215	.044	.689379	.700549	272.295	272.837	.045	.691469	.702777	24
25	277.194	277.866	.056	1.720729	1.732037	287.188	287.870	.057	1.723075	1.734536	25
26	291.985	292.795	.068	.751784	.763245	302.359	303.179	.068	.754415	.766044	26
27	307.051	307.999	.079	.782621	.794250	317.798	318.749	.079	.785567	.797380	27
28	322.384	323.461	.090	.813313	.825126	333.493	334.567	.089	.816606	.828620	28
29	337.969	339.170	.100	.843930	.855944	349.427	350.618	.099	.847607	.859842	29
30	353.794	355.109	.110	1.874543	1.886778	365.580	366.874	.108	1.878649	1.891131	30
31	369.835	371.253	.118	.905229	.917711	381.934	383.325	.116	.909810	.922558	31
32	386.076	387.591	.126	.936064	.948812	398.466	399.937	.123	.941170	.954218	32
33	402.493	404.087	.133	.967123	.980171	415.152	416.699	.129	.972813	.986183	33
34	419.064	420.733	.139	.998488	2.011858	431.979	433.589	.134	2.004816	2.018541	34
35	435.773	437.506	.144	2.030237	2.043962	448.915	450.572	.138	2.037274	2.051392	35
36	452.593	454.372	.148	.062461	.076579	465.931	467.622	.141	.070288	.084837	36
37	469.492	471.304	.151	.095258	.109807	483.008	484.724	.143	.103951	.118969	37
38	486.450	488.287	.153	.128724	.143742	500.113	501.834	.143	.138376	.153915	38
39	503.437	505.279	.153	.162967	.178506	517.217	518.930	.143	.173681	.189790	39
40	520.422	522.257	.153	2.198106	2.214215	534.286	535.973	.141	2.209996	2.226734	40
41	537.373	539.182	.151	.234268	.251006	551.276	552.910	.136	.247454	.264876	41
42	554.246	556.002	.146	.271587	.289009	568.188	569.797	.134	.286206	.304387	42
43	571.042	572.773	.144	.310212	.328393	584.997	586.528	.128	.326408	.345409	43

24. π = 13.3082.   **25.** π = 13.6687.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

n.	26. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	27. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n.
0	10.800	7.551	.271	0.010184	0.020134	11.170	7.892	.273	0.010199	0.020166	0
1	18.492	15.384	.259	.321413	.331380	19.208	16.075	.261	.321450	.331435	1
2	26.469	23.505	.247	.507809	.517794	27.532	24.541	.249	.507870	.517878	2
3	34.731	31.907	.235	.643160	.653168	36.151	33.313	.237	.643247	.653276	3
4	43.284	40.613	.223	.750593	.760622	45.076	42.391	.224	.750708	.760763	4
5	52.143	49.623	.210	0.840410	0.850465	54.313	51.787	.210	0.840558	0.850639	5
6	61.309	58.947	.197	.918111	.928192	63.865	61.496	.197	.918295	.928407	6
7	70.790	68.583	.184	.986978	.997090	73.737	71.530	.184	.987207	.997352	7
8	80.586	78.541	.170	1.049138	1.059283	83.928	81.877	.171	1.049416	1.059600	8
9	90.700	88.810	.158	.106038	.116222	94.444	92.564	.157	.106371	.116594	9
10	101.138	99.416	.143	1.158714	1.168937	105.302	103.591	.143	1.159104	1.169369	10
11	111.913	110.361	.129	.207932	.218197	116.495	114.952	.129	.208388	.218704	11
12	123.022	121.635	.116	.254277	.264593	128.024	126.647	.115	.254813	.265183	12
13	134.463	133.242	.102	.298213	.308583	139.886	138.677	.101	.298835	.309265	13
14	146.236	145.181	.088	.340102	.350532	152.093	151.062	.086	.340818	.351309	14
15	158.352	157.473	.073	1.380240	1.390731	164.639	163.768	.073	1.381062	1.391629	15
16	170.802	170.082	.060	.418875	.429442	177.520	176.823	.058	.419817	.430459	16
17	183.585	183.040	.045	.456215	.466857	190.740	190.209	.044	.457288	.468018	17
18	196.707	196.324	.032	.492434	.503164	204.290	203.923	.031	.493657	.504482	18
19	210.154	209.935	.018	.527690	.538515	218.168	217.965	.017	.529076	.540005	19
20	223.927	223.871	.005	1.562115	1.573044	232.368	232.324	.004	1.563685	1.574729	20
21	238.021	238.121	.008	.595831	.606875	246.883	246.993	.009	.597605	.608775	21
22	252.424	252.679	.021	.628947	.640117	261.704	261.967	.022	.630946	.642254	22
23	267.134	267.540	.034	.661562	.672870	276.820	277.225	.034	.663813	.675274	23
24	282.136	282.683	.046	.693769	.705230	292.218	292.763	.045	.696300	.707929	24
25	297.418	298.104	.057	1.725657	1.737286	307.888	308.566	.057	1.728499	1.740312	25
26	312.970	313.787	.068	.757310	.769123	323.817	324.620	.067	.760494	.772508	26
27	328.778	329.720	.079	.788807	.800821	339.990	340.911	.077	.792370	.804605	27
28	344.829	345.888	.088	.820227	.832462	356.384	357.410	.085	.824213	.836695	28
29	361.099	362.262	.097	.851654	.864136	372.983	374.107	.094	.856110	.868858	29
30	377.573	378.834	.105	1.883169	1.895917	389.761	390.967	.100	1.888145	1.901193	30
31	394.224	395.566	.112	.914853	.927901	406.697	407.979	.107	.920406	.933776	31
32	411.033	412.450	.118	.946793	.960163	423.774	425.122	.112	.952978	.966703	32
33	427.981	429.463	.123	.979071	.992796	440.965	442.359	.116	.985959	2.000077	33
34	445.041	446.570	.127	2.011781	2.025899	458.235	459.664	.119	2.019452	.034001	34
35	462.181	463.744	.130	2.045025	2.059574	475.567	477.021	.121	2.053555	2.068573	35
36	479.382	480.970	.132	.078901	.093919	492.928	494.387	.122	.088383	.103922	36
37	496.612	498.205	.133	.113520	.129059	510.287	511.739	.121	.124057	.140166	37
38	513.840	515.426	.132	.149004	.165113	527.612	529.037	.119	.160709	.177447	38
39	531.034	532.593	.130	.185481	.202219	544.856	546.227	.114	.198475	.215897	39
40	548.147	549.653	.126	2.223088	2.240510	562.020	563.366	.112	2.237507	2.255688	40
41	565.183	566.664	.123	.261976	.280157	579.081	580.347	.106	.277963	.296964	41
42	582.115	583.516	.117	.302300	.321301	595.966	597.137	.098	.320028	.339946	42
43	598.872	600.180	.109	.344246	.364164	612.658	613.731	.089	.363895	.384806	43

26. π = 14.0485.   **27.** π = 14.4479.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 28$. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	29. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	11.559	8.248	.276	0.010220	0.020205	11.958	8.604	.279	0.010244	0.020252	0
1	19.949	16.782	.264	.321494	.331502	20.718	17.519	.267	.321541	.331570	1
2	28.637	25.623	.251	.507938	.517967	29.788	26.746	.254	.508011	.518066	2
3	37.633	34.774	.238	.643342	.653397	39.177	36.295	.240	.643446	.653527	3
4	46.944	44.244	.225	.750835	.760916	48.885	46.163	.227	.750973	.761085	4
5	56.572	54.031	.212	0.840720	0.850832	58.918	56.361	.213	0.840900	0.851045	5
6	66.522	64.144	.198	.918500	.928645	69.275	66.877	.200	.918728	.928912	6
7	76.793	74.573	.185	.987462	.997646	79.964	77.739	.185	.987740	.997963	7
8	87.394	85.346	.171	1.049723	1.059946	90.998	88.946	.171	1.050056	1.060321	8
9	98.338	96.461	.156	.106733	.116998	102.375	100.492	.157	.107131	.117447	9
10	109.620	107.911	.142	1.159532	1.169848	114.091	112.378	.143	1.160006	1.170376	10
11	121.240	119.699	.128	.208894	.219264	126.148	124.605	.129	.209451	.219881	11
12	133.197	131.826	.114	.255403	.265833	138.554	137.192	.113	.256051	.266542	12
13	145.502	144.309	.099	.299517	.310008	151.305	150.106	.100	.300268	.310835	13
14	158.147	157.116	.086	.341605	.352172	164.397	163.375	.085	.342472	.353114	14
15	171.130	170.275	.071	1.381968	1.392610	177.833	176.979	.071	1.382962	1.393692	15
16	184.455	183.767	.057	.420851	.431581	191.604	190.917	.057	.421991	.432816	16
17	198.114	197.591	.044	.458471	.469296	205.709	205.189	.043	.459769	.470698	17
18	212.102	211.744	.030	.495000	.505929	220.141	219.782	.030	.496479	.507523	18
19	226.415	226.217	.017	.530601	.541645	234.893	234.691	.017	.532280	.543450	19
20	241.044	241.003	.003	1.565412	1.576582	249.956	249.909	.004	1.567312	1.578620	20
21	255.984	256.096	.009	.599556	.610864	265.319	265.417	.008	.601703	.613164	21
22	271.221	271.476	.021	.633147	.644608	280.969	281.209	.020	.635569	.647198	22
23	286.741	287.137	.033	.666291	.677920	296.895	297.269	.031	.669018	.680831	23
24	302.535	303.065	.044	.699086	.710899	313.084	313.586	.042	.702150	.714164	24
25	318.591	319.248	.055	1.731624	1.743638	329.520	330.143	.052	1.735062	1.747297	25
26	334.893	335.668	.065	.763995	.776230	346.184	346.912	.061	.767850	.780332	26
27	351.417	352.298	.073	.796292	.808774	363.053	363.882	.069	.800610	.813358	27
28	368.148	369.128	.082	.828602	.841350	380.105	381.017	.076	.833434	.846482	28
29	385.059	386.122	.089	.861016	.874064	397.318	398.307	.082	.866418	.879788	29
30	402.131	403.270	.095	1.893624	1.906994	414.674	415.729	.088	1.899651	1.913376	30
31	419.344	420.549	.100	.926514	.940239	432.145	433.248	.092	.933238	.947356	31
32	436.670	437.923	.104	.959786	.973904	449.698	450.836	.095	.967285	.981834	32
33	454.079	455.366	.107	.993546	2.008095	467.312	468.477	.097	2.001896	2.016914	33
34	471.548	472.861	.109	2.027894	.042912	484.958	486.127	.097	.037188	.052727	34
35	489.048	490.365	.110	2.062946	2.078485	502.601	503.762	.097	2.073287	2.089396	35
36	506.544	507.855	.109	.098824	.114933	520.208	521.342	.095	.110325	.127063	36
37	524.007	525.290	.107	.135663	.152401	537.733	538.813	.090	.148443	.165865	37
38	541.388	542.617	.102	.173599	.191021	555.179	556.233	.088	.187797	.205978	38
39	558.690	559.893	.100	.212786	.230967	572.518	573.491	.081	.228543	.247544	39
40	575.885	577.009	.094	2.253382	2.272383	589.679	590.555	.073	2.270870	2.290788	40
41	592.906	593.933	.086	.295574	.315492	606.644	607.420	.065	.314975	.335886	41
42	609.730	610.658	.077	.339556	.360467	623.386	624.041	.055	.361067	.383074	42
43	626.334	627.142	.067	.385539	.407546	639.875	640.396	.043	.409383	.432587	43

28. $\pi = 14.8689$.   **29.** $\pi = 15.3125$.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years n.	30. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	31. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years n.
0	12.386	8.992	.283	0.010266	0.020295	12.832	9.392	.287	0.010293	0.020348	0
1	21.535	18.300	.270	.321589	.331644	22.387	19.111	.273	.321644	.331725	1
2	31.005	27.931	.256	.508090	.518171	32.268	29.155	.259	.508176	.518288	2
3	40.798	37.885	.243	.643557	.653669	42.480	39.534	.246	.643685	.653830	3
4	50.917	48.171	.229	.751126	.761271	53.022	50.238	.232	.751298	.761482	4
5	61.364	58.778	.216	0.841100	0.851284	63.901	61.293	.217	0.841319	0.851542	5
6	72.146	69.734	.201	.918977	.929200	75.132	72.701	.203	.919249	.929514	6
7	83.276	81.039	.186	.988043	.998308	86.712	84.452	.188	.988376	.998692	7
8	94.751	92.685	.172	1.050422	1.060738	98.637	96.550	.174	1.050828	1.061198	8
9	106.569	104.674	.158	.107571	.117941	110.908	108.995	.159	.108057	.118487	9
10	118.730	117.007	.144	1.160528	1.170958	123.536	121.807	.144	1.161100	1.171591	10
11	131.245	129.704	.128	.210061	.220552	136.514	134.950	.130	.210734	.221301	11
12	144.106	142.729	.115	.256763	.267330	149.839	148.456	.115	.257548	.268190	12
13	157.311	156.114	.100	.301095	.311737	163.515	162.303	.101	.302002	.312732	13
14	170.865	169.836	.086	.343424	.354154	177.532	176.490	.087	.344474	.355299	14
15	184.755	183.895	.072	1.384058	1.394883	191.888	191.016	.073	1.385262	1.396191	15
16	198.982	198.291	.058	.423244	.434173	206.578	205.869	.059	.424624	.435668	16
17	213.540	213.010	.044	.461199	.472243	221.592	221.044	.046	.462774	.473944	17
18	228.419	228.048	.031	.498107	.509277	236.924	236.533	.033	.499897	.511205	18
19	243.613	243.399	.018	.534126	.545434	252.561	252.318	.020	.536159	.547620	19
20	259.109	259.041	.006	1.569403	1.580864	268.490	268.391	.008	1.571705	1.583334	20
21	274.895	274.970	.006	.604066	.615695	284.700	284.738	.003	.606667	.618480	21
22	290.960	291.170	.017	.638235	.650048	301.178	301.346	.014	.641167	.653181	22
23	307.289	307.629	.028	.672018	.684032	317.907	318.198	.024	.675317	.687552	23
24	323.868	324.329	.038	.705520	.717755	334.868	335.266	.033	.709230	.721712	24
25	340.676	341.243	.047	1.738846	1.751328	352.037	352.538	.042	1.743013	1.755761	25
26	357.691	358.361	.056	.772095	.784843	369.394	369.979	.049	.776768	.789816	26
27	374.892	375.644	.063	.805364	.818412	386.914	387.578	.055	.810600	.823970	27
28	392.254	393.085	.069	.838755	.852125	404.580	405.311	.061	.844609	.858334	28
29	409.761	410.658	.075	.872360	.886085	422.362	423.142	.065	.878902	.893020	29
30	427.383	428.329	.079	1.906286	1.920404	440.228	441.043	.068	1.913595	1.928144	30
31	445.089	446.070	.082	.940644	.955193	458.157	458.999	.070	.948795	.963813	31
32	462.857	463.864	.084	.975538	.990556	476.116	476.963	.071	.984625	2.000164	32
33	480.655	481.667	.084	2.011089	2.026628	494.074	494.913	.070	2.021214	.037323	33
34	498.450	499.455	.084	.047424	.063533	511.995	512.807	.068	.058699	.075437	34
35	516.211	517.188	.081	2.084677	2.101415	529.834	530.589	.063	2.097223	2.114645	35
36	533.889	534.810	.077	.122991	.140413	547.590	548.320	.061	.136945	.155126	36
37	551.485	552.382	.075	.162522	.180703	565.238	565.886	.054	.178025	.197026	37
38	568.975	569.789	.068	.203430	.222431	582.706	583.254	.046	.220653	.240571	38
39	586.285	587.002	.060	.245902	.265820	599.972	600.420	.037	.265029	.285940	39
40	603.397	604.013	.051	2.290138	2.311049	617.014	617.337	.027	2.311364	2.333371	40
41	620.285	620.778	.041	.336347	.358354	633.796	633.984	.016	.359897	.383101	41
42	636.916	637.275	.030	.384768	.407972	650.297	650.338	.003	.410874	.435387	42
43	653.269	653.483	.018	.435645	.460158	666.477	666.345	.011	.464594	.490558	43

30.	π = 15.7791.	31.	π = 16.2712.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. $n.$	$x = 32.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	$\lambda(\mathrm{B}f).$ 6m.	$\lambda\mathrm{B}.$ 12m.	33. V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	$\lambda(\mathrm{B}f).$ 6m.	$\lambda\mathrm{B}.$ 12m.	Policy Years. $n.$
0	13.301	9.811	.291	0.010321	0.020402	13.789	10.240	.296	0.010352	0.020464	0
1	23.275	19.950	.277	.321703	.331815	24.200	20.821	.282	.321772	.331917	1
2	33.584	30.428	.263	.508275	.518420	34.946	31.733	.268	.508385	.518569	2
3	44.226	41.233	.249	.643826	.654010	46.037	43.004	.253	.643981	.654204	3
4	55.208	52.394	.235	.751485	.761708	57.488	54.634	.238	.751688	.761953	4
5	66.547	63.909	.220	0.841558	0.851823	69.294	66.615	.223	0.841819	0.852135	5
6	78.235	75.772	.205	.919547	.929863	81.450	78.948	.209	.919877	.930247	6
7	90.274	87.985	.191	.988745	.999115	93.961	91.636	.194	.989152	.999582	7
8	102.661	100.548	.176	1.051275	1.061705	106.836	104.697	.178	1.051765	1.062256	8
9	115.410	113.481	.161	.108589	.119080	120.066	118.097	.164	.109174	.119741	9
10	128.510	126.749	.147	1.161730	1.172297	133.650	131.865	.149	1.162424	1.173066	10
11	141.961	140.383	.131	.211474	.222116	147.592	145.982	.134	.212287	.223017	11
12	155.767	154.361	.117	.258409	.269139	161.883	160.445	.120	.259359	.270184	12
13	169.916	168.682	.103	.303003	.313828	176.518	175.254	.105	.304103	.315032	13
14	184.409	183.346	.089	.345627	.356556	191.495	190.397	.091	.346896	.357940	14
15	199.238	198.340	.075	1.386588	1.397632	206.801	205.867	.078	1.388047	1.399217	15
16	214.395	213.659	.061	.426142	.437312	222.432	221.659	.064	.427811	.439119	16
17	229.872	229.295	.048	.464505	.475813	238.374	237.751	.052	.466411	.477872	17
18	245.657	245.229	.036	.501868	.513329	254.613	254.137	.040	.504037	.515666	18
19	261.737	261.455	.024	.538396	.550025	271.139	270.803	.028	.540858	.552671	19
20	278.101	277.957	.012	1.574238	1.586051	287.937	287.734	.017	1.577025	1.589039	20
21	294.734	294.722	.001	.609529	.621543	304.994	304.915	.007	.612675	.624910	21
22	311.623	311.734	.009	.644392	.656627	322.284	322.315	.003	.647942	.660424	22
23	328.744	328.964	.018	.678949	.691431	339.788	339.924	.011	.682949	.695697	23
24	346.077	346.400	.027	.713315	.726063	357.483	357.704	.018	.717813	.730861	24
25	363.598	364.006	.034	1.747600	1.760648	375.344	375.646	.025	1.752653	1.766023	25
26	381.284	381.771	.041	.781914	.795284	393.354	393.724	.031	.787576	.801301	26
27	399.117	399.673	.046	.816360	.830085	411.483	411.903	.035	.822702	.836820	27
28	417.068	417.673	.050	.851053	.865171	429.697	430.153	.038	.858152	.872701	28
29	435.103	435.744	.053	.886109	.900658	447.975	448.459	.040	.894042	.909060	29
30	453.202	453.870	.056	1.921640	1.936658	466.285	466.773	.041	1.930498	1.946037	30
31	471.333	472.005	.056	.957771	.973310	484.592	485.073	.040	.967657	.983766	31
32	489.460	490.125	.055	.994634	2.010743	502.863	503.315	.038	2.005660	2.022398	32
33	507.551	508.188	.053	2.032368	.049106	521.048	521.444	.033	.044655	.062077	33
34	525.559	526.139	.048	.071118	.088540	539.151	539.520	.031	.084802	.102983	34
35	543.483	544.038	.046	2.111045	2.129226	557.143	557.428	.024	2.126267	2.145268	35
36	561.299	561.770	.039	.152310	.171311	574.951	575.135	.015	.169242	.189160	36
37	578.932	579.303	.031	.195106	.215024	592.554	592.635	.007	.213929	.234840	37
38	596.362	596.631	.022	.239632	.260543	609.927	609.882	.004	.260544	.282551	38
39	613.565	613.710	.012	.286102	.308109	627.037	626.853	.015	.309326	.332530	39
40	630.507	630.514	.001	2.334755	2.357959	643.858	643.526	.028	2.360524	2.385037	40
41	647.164	647.023	.012	.385839	.410352	660.355	659.845	.043	.414439	.440403	41
42	663.497	663.182	.026	.439653	.465617	676.495	675.808	.057	.471378	.498915	42
43	679.481	678.989	.041	.496504	.524041	692.273	691.399	.073	.531660	.560916	43

32. $\pi = 16.7902.$ **33.** $\pi = 17.3376.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000,

4 PER CENT.

Policy Years. n.	34.					35.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	14.303	10.691	.301	0.010390	0.020535	14.834	11.144	.308	0.010430	0.020614	0
1	25.161	21.716	.287	.321849	.332033	26.162	22.655	.292	.321929	.332152	1
2	36.367	33.103	.272	.508504	.518727	37.855	34.532	.277	.508630	.518895	2
3	47.936	44.853	.257	.644147	.654412	49.912	46.767	.262	.644328	.654644	3
4	59.863	56.958	.242	.751910	.762226	62.327	59.363	.247	.752158	.762528	4
5	72.146	69.419	.227	0.842109	0.852479	75.103	72.320	.232	0.842429	0.852859	5
6	84.786	82.238	.212	.920241	.930671	88.252	85.659	.216	.920641	.931132	6
7	97.793	95.434	.197	.989597	1.000088	101.763	99.344	.202	.990087	1.000654	7
8	111.161	108.973	.182	1.052304	.062871	115.637	113.406	.186	1.052897	.063539	8
9	124.886	122.884	.167	.109819	.120461	129.876	127.822	.171	.110527	.121257	9
10	138.973	137.147	.152	1.163186	1.173916	144.470	142.593	.156	1.164025	1.174850	10
11	153.411	151.759	.138	.213183	.224008	159.417	157.717	.142	.214167	.225096	11
12	168.198	166.722	.123	.260402	.271331	174.711	173.182	.127	.261550	.272594	12
13	183.329	182.021	.109	.305313	.316357	190.344	188.981	.114	.306646	.317816	13
14	198.794	197.652	.095	.348294	.359464	206.306	205.108	.100	.349830	.361138	14
15	214.586	213.606	.082	1.389652	1.400960	222.587	221.542	.087	1.391418	1.402879	15
16	230.693	229.865	.069	.429649	.441110	239.172	238.277	.075	.431673	.443302	16
17	247.101	246.421	.057	.468509	.480138	256.049	255.297	.063	.470818	.482631	17
18	263.797	263.259	.045	.506425	.518238	273.205	272.589	.051	.509051	.521065	18
19	280.770	280.365	.034	.543567	.555581	290.624	290.135	.041	.546545	.558780	19
20	298.002	297.724	.023	1.580090	1.592325	308.282	307.905	.031	1.583463	1.595945	20
21	315.471	315.304	.014	.616140	.628622	326.158	325.888	.022	.619955	.632703	21
22	333.157	333.095	.005	.651852	.664600	344.230	344.047	.015	.656156	.669204	22
23	351.035	351.059	.002	.687352	.700400	362.470	362.370	.008	.692203	.705573	23
24	369.080	369.186	.009	.722768	.736138	380.864	380.833	.003	.728218	.741943	24
25	387.276	387.452	.015	1.758212	1.771937	399.377	399.398	.002	1.764332	1.778450	25
26	405.593	405.819	.019	.793810	.807928	417.979	418.036	.005	.800678	.815227	26
27	423.996	424.258	.022	.829689	.844238	436.646	436.731	.007	.837379	.852397	27
28	442.463	442.753	.024	.865967	.880985	455.345	455.435	.008	.874572	.890111	28
29	460.962	461.256	.025	.902777	.918316	474.041	474.123	.007	.912399	.928508	29
30	479.458	479.745	.024	1.940256	1.956365	492.700	492.754	.004	1.951007	1.967745	30
31	497.918	498.176	.021	.978550	.995288	511.273	511.268	.000	.990549	2.007971	31
32	516.292	516.493	.017	2.017807	2.035229	529.760	529.728	.003	2.031191	.049372	32
33	534.582	534.756	.015	.058192	.076373	548.135	548.017	.010	.073102	.092103	33
34	552.760	552.849	.007	.099872	.118873	566.321	566.101	.018	.116479	.136397	34
35	570.752	570.739	.001	2.143040	2.162958	584.299	583.973	.027	2.161527	2.182438	35
36	588.537	588.420	.010	.187901	.208812	602.041	601.586	.038	.208464	.230471	36
37	606.090	605.846	.020	.234671	.256678	619.514	618.918	.050	.257533	.280737	37
38	623.377	622.997	.032	.283591	.306795	636.694	635.946	.062	.308985	.333498	38
39	640.372	639.838	.044	.334912	.359425	653.541	652.612	.077	.363125	.389089	39
40	657.040	656.326	.060	2.388935	2.414899	670.026	668.915	.093	2.420261	2.447798	40
41	673.347	672.454	.074	.445970	.473507	686.138	684.837	.108	.480714	.509970	41
42	689.288	688.207	.090	.506334	.535590	701.846	700.332	.126	.544876	.576033	42
43	704.829	703.535	.108	.570419	.601576	717.128	715.399	.144	.613161	.646384	43

34. $\pi = 17.9149.$

35. $\pi = 18.5241.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 36. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	37. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
0	15.403	11.640	.314	0.010470	0.020693	15.999	12.152	.321	0.010514	0.020779	0
1	27.229	23.651	.298	.322014	.332279	28.334	24.671	.305	.322111	.332427	1
2	39.420	36.024	.283	.508769	.519085	41.037	37.559	.290	.508927	.519297	2
3	51.976	48.762	.268	.644531	.654901	54.111	50.817	.275	.644756	.655186	3
4	64.897	61.866	.253	.752432	.762862	67.564	64.465	.258	.752730	.763221	4
5	78.194	75.355	.237	0.842778	0.853269	81.388	78.467	.243	0.843164	0.853731	5
6	91.857	89.194	.222	.921079	.931646	95.583	92.854	.227	.921563	.932205	6
7	105.887	103.414	.206	.990627	1.001269	110.152	107.605	.212	.991219	1.001949	7
8	120.287	117.993	.191	1.053548	.064278	125.084	122.718	.197	1.054267	.065092	8
9	135.044	132.930	.176	.111307	.122132	140.378	138.193	.182	.112164	.123093	9
10	150.161	148.225	.161	1.164947	1.175876	156.027	154.016	.168	1.165963	1.177007	10
11	165.627	163.864	.147	.215250	.226294	172.022	170.182	.153	.216443	.227613	11
12	181.436	179.841	.133	.262814	.273984	188.355	186.683	.139	.264205	.275513	12
13	197.578	196.150	.119	.308111	.319419	205.013	203.498	.126	.309724	.321185	13
14	214.043	212.769	.106	.351522	.362983	221.981	220.620	.113	.353385	.365014	14
15	230.814	229.693	.093	1.393363	1.404992	239.250	238.035	.101	1.395503	1.407316	15
16	247.882	246.905	.081	.433899	.445712	256.804	255.727	.090	.436349	.448363	16
17	265.231	264.391	.070	.473358	.485372	274.626	273.680	.079	.476151	.488386	17
18	282.846	282.135	.059	.511939	.524174	292.693	291.862	.069	.515119	.527601	18
19	300.703	300.105	.050	.549824	.562306	310.985	310.262	.060	.553436	.566184	19
20	318.781	318.291	.041	1.587179	1.599927	329.474	328.842	.053	1.591271	1.604319	20
21	337.055	336.654	.033	.624155	.637203	348.138	347.589	.046	.628783	.642153	21
22	355.502	355.184	.026	.660898	.674268	366.957	366.480	.040	.666115	.679840	22
23	374.103	373.855	.021	.697539	.711264	385.901	385.476	.035	.703415	.717533	23
24	392.825	392.629	.016	.734219	.748337	404.933	404.546	.032	.740831	.755380	24
25	411.636	411.478	.013	1.771075	1.785624	424.032	423.674	.030	1.778499	1.793517	25
26	430.514	430.383	.011	.808238	.823256	443.166	442.812	.029	.816565	.832104	26
27	449.423	449.298	.010	.845849	.861388	462.295	461.933	.030	.855180	.871289	27
28	468.331	468.197	.011	.884053	.900162	481.387	480.996	.033	.894509	.911238	28
29	487.200	487.037	.014	.923002	.939740	500.390	499.939	.038	.934684	.952106	29
30	505.981	505.760	.018	1.962852	1.980274	519.305	518.827	.040	1.975906	1.994087	30
31	524.677	524.428	.021	2.003772	2.021953	538.106	537.540	.047	2.018338	2.037339	31
32	543.259	542.923	.028	.045934	.064935	556.714	556.043	.056	.062183	.082101	32
33	561.650	561.211	.037	.089535	.109453	575.109	574.329	.065	.107650	.128561	33
34	579.830	579.284	.046	.134785	.155696	593.263	592.351	.076	.154962	.176969	34
35	597.774	597.097	.056	2.181902	2.203909	611.140	610.085	.088	2.204363	2.227567	35
36	615.443	614.624	.068	.231131	.254335	628.718	627.507	.101	.256110	.280623	36
37	632.817	631.843	.081	.282725	.307238	645.956	644.559	.116	.310510	.336474	37
38	649.853	648.697	.096	.336990	.362954	662.822	661.240	.132	.367873	.395410	38
39	666.523	665.183	.112	.394235	.421772	679.308	677.532	.148	.428524	.457780	39
40	682.817	681.285	.128	2.454784	2.484040	695.381	693.385	.166	2.492857	2.524014	40
41	698.702	696.954	.146	.519028	.550185	711.016	708.802	.185	.561287	.594510	41
42	714.156	712.191	.164	.587383	.620606	726.206	723.764	.203	.634256	.669739	42
43	729.168	726.980	.182	.660287	.695770	740.936	738.264	.223	.712260	.750216	43

36.	π = 19.1663.	**37.**	π = 19.8452.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	38. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	39. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	16.618	12.673	.329	0.010568	0.020884	17.267	13.214	.338	0.010624	0.020994	0
1	29.477	25.719	.313	.322221	.332591	30.671	26.807	.322	.322341	.332771	1
2	42.710	39.140	.298	.509102	.519532	44.463	40.800	.305	.509289	.519780	2
3	56.329	52.956	.281	.645002	.655493	58.638	55.156	.290	.645272	.655839	3
4	70.324	67.130	.266	.753060	.763627	73.192	69.908	.274	.753423	.764065	4
5	84.694	81.695	.250	0.843589	0.854231	88.130	85.032	.258	0.844054	0.854784	5
6	99.442	96.627	.235	.922094	.932824	103.440	100.527	.243	.922678	.933503	6
7	114.557	111.926	.219	.991873	1.002698	119.120	116.393	.227	.992591	1.003520	7
8	130.040	127.591	.204	1.055056	.065985	135.165	132.617	.212	1.055925	.066969	8
9	145.881	143.609	.189	.113110	.124154	151.564	149.191	.198	.114148	.125318	9
10	162.072	159.973	.175	1.167081	1.178251	168.310	166.109	.183	1.168310	1.179618	10
11	178.606	176.677	.161	.217755	.229063	185.390	183.350	.170	.219199	.230660	11
12	195.469	193.699	.147	.265736	.277197	202.788	200.906	.157	.267421	.279050	12
13	212.647	211.033	.135	.311500	.323129	220.493	218.761	.144	.313455	.325268	13
14	230.128	228.661	.122	.355434	.367247	238.491	236.901	.133	.357689	.369703	14
15	247.897	246.571	.110	1.397858	1.409872	256.764	255.307	.121	1.400447	1.412682	15
16	265.939	264.745	.100	.439043	.451278	275.288	273.949	.112	.442008	.454490	16
17	284.228	283.150	.090	.479227	.491709	294.042	292.815	.102	.482615	.495363	17
18	302.745	301.777	.081	.518622	.531370	312.999	311.864	.095	.522478	.535526	18
19	321.462	320.585	.073	.557414	.570462	332.135	331.086	.087	.561795	.575165	19
20	340.355	339.564	.066	1.595779	1.609149	351.431	350.455	.081	1.600738	1.614463	20
21	359.407	358.687	.060	.633875	.647600	370.853	369.931	.077	.639481	.653599	21
22	378.582	377.916	.055	.671860	.685978	390.367	389.484	.074	.678190	.692739	22
23	397.850	397.221	.052	.709891	.724440	409.950	409.096	.071	.717019	.732037	23
24	417.183	416.584	.050	.748111	.763129	429.567	428.717	.071	.756129	.771668	24
25	436.552	435.957	.050	1.786675	1.802214	449.180	448.323	.071	1.795684	1.811793	25
26	455.916	455.314	.050	.825739	.841848	468.755	467.867	.074	.835850	.852588	26
27	475.244	474.611	.053	.865464	.882202	488.238	487.290	.079	.876794	.894216	27
28	494.480	493.787	.058	.906012	.923434	507.633	506.656	.081	.918699	.936880	28
29	513.628	512.908	.060	.947560	.965741	526.909	525.842	.089	.961745	.980746	29
30	532.661	531.851	.068	1.990136	2.009137	545.988	544.813	.098	2.006139	2.026057	30
31	551.497	550.581	.076	2.034395	.054313	564.847	563.562	.107	.052097	.073008	31
32	570.117	569.092	.085	.080097	.101008	583.461	582.040	.118	.099845	.121852	32
33	588.496	587.337	.097	.127619	.149626	601.791	600.222	.131	.149635	.172839	33
34	606.593	605.288	.109	.177207	.200411	619.814	618.085	.144	.201726	.226239	34
35	624.388	622.925	.122	2.229119	2.253632	637.486	635.568	.160	2.256427	2.282391	35
36	641.837	640.187	.137	.283663	.309627	654.780	652.671	.176	.314055	.341592	36
37	658.911	657.073	.153	.341154	.368691	671.683	669.375	.192	.374935	.404191	37
38	675.600	673.565	.170	.401915	.431171	688.162	685.629	.211	.439466	.470623	38
39	691.870	689.613	.188	.466343	.497500	704.192	701.436	.230	.508066	.541289	39
40	707.697	705.219	.207	2.534855	2.568078	719.767	716.777	.249	2.581178	2.616661	40
41	723.073	720.366	.226	.607893	.643376	734.870	731.643	.269	.659303	.697259	41
42	737.986	735.044	.245	.685955	.723911	749.505	746.047	.288	.742974	.783620	42
43	752.436	749.265	.264	.769575	.810221	763.667	759.967	.308	.832813	.876419	43

| **38.** | $\pi = 20.5624.$ | **39.** | $\pi = 21.3199.$ |

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 40. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	41. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
0	17.948	13.775	.348	0.010687	0.021117	18.673	14.379	.358	0.010752	0.021243	0
1	31.926	27.956	.331	.322469	.332960	33.238	29.130	.342	.322612	.333179	1
2	46.291	42.504	.316	.509497	.520064	48.193	44.288	.325	.509727	.520369	2
3	61.039	57.453	.299	.645569	.656211	63.542	59.829	.309	.645894	.656624	3
4	76.177	72.780	.283	.753819	.764549	79.273	75.751	.294	.754258	.765083	4
5	91.691	88.482	.267	0.844568	0.855393	95.386	92.054	.278	0.845131	0.856060	5
6	107.582	104.561	.252	.923321	.934250	111.873	108.724	.262	.924029	.935073	6
7	123.842	121.002	.237	.993381	1.004425	128.723	125.755	.247	.994251	1.005421	7
8	140.461	137.798	.222	1.056883	.068053	145.931	143.140	.233	1.057934	.069242	8
9	157.431	154.943	.207	.115290	.126598	163.481	160.855	.219	.116549	.128010	9
10	174.739	172.414	.194	1.169663	1.181124	181.358	178.894	.205	1.171153	1.182782	10
11	192.370	190.205	.180	.220789	.232418	199.551	197.241	.192	.222539	.234352	11
12	210.312	208.299	.168	.269276	.281089	218.044	215.881	.180	.271315	.283329	12
13	228.551	226.682	.156	.315604	.327618	236.822	234.795	.169	.317968	.330203	13
14	247.069	245.335	.145	.360168	.372403	255.856	253.950	.159	.362898	.375380	14
15	265.842	264.227	.135	1.403298	1.415780	275.126	273.335	.149	1.406438	1.419186	15
16	284.846	283.345	.125	.445275	.458023	294.605	292.909	.141	.448873	.461921	16
17	304.058	302.650	.117	.486345	.499393	314.269	312.661	.134	.490455	.503825	17
18	323.450	322.129	.110	.526728	.540098	334.095	332.563	.128	.531402	.545127	18
19	343.004	341.757	.104	.566616	.580341	354.053	352.576	.123	.571924	.586042	19
20	362.686	361.494	.099	1.606200	1.620318	374.105	372.667	.120	1.612218	1.626767	20
21	382.462	381.309	.096	.645659	.660208	394.227	392.819	.117	.652462	.667480	21
22	402.306	401.183	.094	.685160	.700178	414.383	412.981	.117	.692837	.708376	22
23	422.186	421.067	.093	.724871	.740410	434.538	433.127	.118	.733524	.749633	23
24	442.061	440.935	.094	.764965	.781074	454.651	453.209	.120	.774703	.791441	24
25	461.899	460.741	.096	1.805614	1.822352	474.672	473.167	.125	1.816556	1.833978	25
26	481.643	480.424	.102	.846991	.864413	494.600	493.066	.128	.859274	.877455	26
27	501.297	500.049	.104	.889285	.907466	514.407	512.781	.136	.903047	.922048	27
28	520.831	519.493	.112	.932678	.951679	534.011	532.274	.145	.948091	.968009	28
29	540.166	538.717	.121	.977383	.997301	553.390	551.540	.154	.994628	2.015539	29
30	559.277	557.717	.130	2.023618	2.044529	572.517	570.527	.166	2.042891	2.064898	30
31	578.141	576.443	.141	.071613	.093620	591.352	589.210	.178	.093137	.116341	31
32	596.716	594.868	.154	.121622	.144826	609.871	607.565	.192	.145630	.170143	32
33	614.979	612.970	.167	.173906	.198419	628.031	625.530	.208	.200684	.226648	33
34	632.890	630.688	.184	.228776	.254740	645.801	643.104	.225	.258621	.286158	34
35	650.414	648.020	.199	2.286552	2.314089	663.169	660.268	.242	2.319769	2.349025	35
36	667.544	664.947	.216	.347561	.376817	680.103	676.970	.261	.384531	.415688	36
37	684.244	681.420	.235	.412203	.443360	696.574	693.211	.280	.453328	.486551	37
38	700.490	697.438	.254	.480898	.514121	712.576	708.975	.300	.526608	.562091	38
39	716.271	712.984	.274	.554090	.589573	728.097	724.251	.321	.604873	.642829	39
40	731.577	728.049	.294	2.632282	2.670238	743.134	739.051	.340	2.688661	2.729307	40
41	746.408	742.646	.314	.716010	.756656	757.687	753.356	.361	.778594	.822200	41
42	760.760	756.753	.334	.805894	.849500	771.778	767.233	.379	.875305	.922097	42
43	774.657	770.439	.351	.902565	.949357	785.440	780.679	.397	.979528	3.029839	43

40. π = 22.1206.   **41.** π = 22.9667.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	42. V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	43. V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	19.415	14.966	.371	0.010831	0.021398	20.212	15.613	.383	0.010911	0.021553	0
1	34.587	30.345	.354	.322771	.333413	36.021	31.620	.367	.322941	.333671	1
2	50.160	46.113	.337	.509978	.520708	52.225	48.020	.350	.510255	.521080	2
3	66.122	62.267	.321	.646255	.657080	68.821	64.812	.334	.646649	.657578	3
4	82.469	78.808	.305	.754740	.765669	85.802	81.982	.318	.755270	.766314	4
5	99.196	95.722	.289	0.845753	0.856797	103.158	99.524	.303	0.846437	0.857607	5
6	116.293	113.001	.274	.924809	.935979	120.882	117.430	.288	.925665	.936973	6
7	133.752	130.639	·259	.995207	1.006515	138.959	135.677	.274	.996260	1.007721	7
8	151.557	148.613	.245	1.059092	.070553	157.372	154.258	.259	1.060366	.071995	8
9	169.696	166.916	.232	.117934	.129563	176.112	173.155	.246	.119458	.131271	9
10	188.155	185.530	.219	1.172793	1.184606	195.159	192.354	.234	1.174597	1.186611	10
11	206.917	204.442	.206	.224464	.236478	214.500	211.835	.222	.226579	.238814	11
12	225.968	223.631	.195	.273558	.285793	234.105	231.565	.212	.276028	.288510	12
13	245.280	243.066	.185	.320571	.333053	253.953	251.532	.202	.323439	.336187	13
14	264.832	262.734	.175	.365905	.378653	274.018	271.694	.194	.369217	.382265	14
15	284.595	282.594	.167	1.409896	1.422944	294.271	292.038	.186	1.413707	1.427077	15
16	304.546	302.634	.159	.452837	.466207	314.693	312.537	.180	.457198	.470923	16
17	324.661	322.826	.153	.494977	.508702	335.248	333.150	.175	.499957	.514075	17
18	344.910	343.131	.148	.536551	.550669	355.903	353.845	.172	.542225	.556774	18
19	365.255	363.515	.145	.577775	.592324	376.628	374.601	.169	.584217	.599235	19
20	385.669	383.961	.142	1.618845	1.633863	397.389	395.368	.168	1.626145	1.641684	20
21	406.121	404.417	.142	.659955	.675494	418.148	416.118	.169	.668214	.684323	21
22	426.568	424.857	.143	.701297	.717406	438.866	436.803	.172	.710624	.727362	22
23	446.976	445.232	.145	.743062	.759800	459.486	457.360	.177	.753574	.770996	23
24	467.288	465.481	.151	.785436	.802858	480.013	477.856	.180	.797270	.815451	24
25	487.508	485.671	.153	1.828620	1.846801	500.415	498.163	.188	1.841914	1.860915	25
26	507.603	505.673	.161	.872808	.891809	520.607	518.241	.197	.887733	.907651	26
27	527.494	525.451	.170	.918222	.938140	540.567	538.084	.207	.934959	.955870	27
28	547.155	544.997	.180	.965089	.986000	560.268	557.641	.219	.983833	2.005840	28
29	566.561	564.261	.192	2.013644	2.035651	579.667	576.884	.232	2.034619	.057823	29
30	585.670	583.217	.204	2.064148	2.087352	598.742	595.790	.246	2.087587	2.112100	30
31	604.460	601.840	.218	.116868	.141381	617.447	614.294	.263	.143058	.169022	31
32	622.885	620.067	.235	.172122	.198086	635.750	632.395	.280	.201358	.228895	32
33	640.914	637.897	.251	.230233	.257770	653.639	650.074	.297	.262822	.292078	33
34	658.535	655.311	.269	.291532	.320788	671.081	667.278	.317	.327854	.359011	34
35	675.716	672.257	.288	2.356424	2.387581	688.048	684.007	.337	2.396883	2.430106	35
36	692.428	688.736	.308	.425333	.458556	704.530	700.243	.357	.470359	.505842	36
37	708.664	704.729	.328	.498706	.534189	720.515	715.977	.378	.548788	.586744	37
38	724.410	720.228	.348	.577049	.615005	736.004	731.222	.398	.632712	.673358	38
39	739.667	735.244	.369	.660903	.701549	750.994	745.955	.420	.722756	.766362	39
40	754.432	749.757	.390	2.750890	2.794496	765.507	760.249	.438	2.819556	2.866348	40
41	768.729	763.837	.408	.847643	.894435	779.578	774.098	.457	.923851	.974162	41
42	782.589	777.479	.426	.951901	3.002212	793.262	787.616	.471	3.036438	3.090542	42
43	796.069	790.795	.440	3.064459	.118563	806.697	800.969	.477	.158109	.216302	43

42. $\pi = 23.8627.$ **43.** $\pi = 24.8099.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 44.					45.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	21.037	16.261	.398	0.011001	0.021731	21.906	16.936	.414	0.011103	0.021928	0
1	37.498	32.921	.381	.323134	.333959	39.044	34.276	.397	.323343	.334272	1
2	54.356	49.979	.365	.510559	.521488	56.580	52.007	.381	.510895	.521939	2
3	71.607	67.422	.349	.647085	.658129	74.502	70.122	.365	.647564	.658734	3
4	89.239	85.242	.333	.755854	.767024	92.806	88.613	.349	.756496	.767804	4
5	107.243	103.432	.318	0.847188	0.858496	111.472	107.455	.335	0.848016	0.859477	5
6	125.607	121.969	.303	.926608	.938069	130.487	126.643	.320	.927646	.939275	6
7	144.313	140.844	.289	.997420	1.009049	149.838	146.157	.307	.998696	1.010509	7
8	163.349	160.041	.276	1.061769	.073582	169.508	165.983	.294	1.063313	.075327	8
9	182.700	179.545	.263	.121134	.133148	189.479	186.100	.282	.122976	.135211	9
10	202.346	199.335	.251	1.176579	1.188814	209.725	206.474	.271	1.178762	1.191244	10
11	222.263	219.378	.240	.228909	.241391	230.222	227.093	.261	.231476	.244224	11
12	242.426	239.661	.230	.278749	.291497	250.941	247.913	.252	.281746	.294794	12
13	262.809	260.143	.222	.326597	.339645	271.855	268.921	.245	.330077	.343447	13
14	283.382	280.809	.214	.372866	.386236	292.943	290.090	.238	.376881	.390606	14
15	304.128	301.634	.208	1.417899	1.431624	314.171	311.376	.233	1.422516	1.436634	15
16	325.011	322.574	.203	.462001	.476119	335.499	332.746	.229	.467295	.481844	16
17	345.991	343.596	.200	.505445	.519994	356.902	354.181	.227	.511489	.526507	17
18	367.046	364.682	.197	.548473	.563491	378.341	375.626	.226	.555356	.570895	18
19	388.136	385.778	.197	.591314	.606853	399.778	397.053	.227	.599137	.615246	19
20	409.225	406.858	.197	1.634191	1.650300	421.171	418.414	.230	1.643062	1.659800	20
21	430.271	427.871	.200	.677318	.694056	442.466	439.641	.235	.687354	.704776	21
22	451.218	448.753	.205	.720904	.738326	463.661	460.806	.238	.732240	.750421	22
23	472.071	469.575	.208	.765165	.783346	484.730	481.777	.246	.777940	.796941	23
24	492.795	490.203	.216	.810311	.829312	505.581	502.510	.256	.824695	.844613	24
25	513.308	510.600	.226	1.856575	1.876493	526.194	523.001	.266	1.872749	1.893660	25
26	533.586	530.758	.236	.904196	.925107	546.537	543.197	.278	.922355	.944362	26
27	553.598	550.625	.248	.953419	.975426	566.571	563.069	.292	.973785	.996989	27
28	573.306	570.174	.261	2.004512	2.027716	586.268	582.592	.306	2.027320	2.051833	28
29	592.683	589.379	.275	.057751	.082264	605.584	601.700	.324	.083286	.109250	29
30	611.684	608.177	.292	2.113459	2.139423	624.484	620.392	.341	2.142017	2.169554	30
31	630.278	626.565	.309	.171965	.199502	642.958	638.648	.359	.203853	.233109	31
32	648.451	644.524	.327	.233606	.262862	660.969	656.414	.380	.269207	.300364	32
33	666.169	662.000	.347	.298793	.329950	678.490	673.689	.400	.338509	.371732	33
34	683.404	678.995	.367	.367953	.401176	695.510	690.456	.421	.412215	.447698	34
35	700.148	695.489	.388	2.441538	2.477021	712.018	706.703	.443	2.490838	2.528794	35
36	716.388	711.473	.410	.520060	.558016	728.012	722.446	.464	.574922	.615568	36
37	732.122	726.959	.430	.604061	.644707	743.491	737.660	.486	.665098	.708704	37
38	747.349	741.926	.452	.694168	.737774	758.478	752.420	.505	.762003	.808795	38
39	762.093	756.446	.471	.791019	.837811	773.009	766.722	.524	.866381	.916692	39
40	776.387	770.516	.489	2.895353	2.945664	787.140	780.682	.538	2.979034	3.033138	40
41	790.289	784.248	.503	3.007972	3.062076	801.015	794.471	.545	3.100754	.158947	41
42	803.937	797.813	.510	.129666	.187859	814.766	808.186	.548	.232640	.295403	42
43	817.466	811.306	.513	.261533	.324296	828.710	822.357	.529	.375628	.443161	43

44. $\pi = 25.8133.$ **45.** $\pi = 26.8757.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	46.					47.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bƒ). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bƒ). 6m.	λB. 12m.	
0	22.821	17.640	.432	0.011211	0.022140	23.778	18.361	.451	0.011332	0.022376	0
1	40.658	35.676	.415	.323573	.334617	42.337	37.118	.435	.323827	.334997	1
2	58.890	54.103	.399	.511264	.522434	61.289	56.265	.419	.511668	.522976	2
3	77.508	72.912	.383	.648090	.659398	80.618	75.776	.404	.648669	.660130	3
4	96.496	92.079	.368	.757202	.768663	100.308	95.645	.389	.757980	.769609	4
5	115.839	111.597	.354	0.848927	0.860556	120.346	115.852	.374	0.849929	0.861742	5
6	135.523	131.448	.340	.928788	.940601	140.714	136.381	.361	.930044	.942058	6
7	155.532	151.615	.326	1.000098	1.012112	161.395	157.213	.349	1.001639	1.013874	7
8	175.847	172.079	.314	.065008	.077243	182.359	178.310	.337	.066875	.079357	8
9	196.442	192.804	.303	.125005	.137487	203.583	199.661	.327	.127241	.139989	9
10	217.292	213.778	.293	1.181167	1.193915	225.038	221.220	.318	1.183816	1.196864	10
11	238.368	234.957	.284	.234303	.247351	246.694	242.974	.310	.237418	.250788	11
12	259.642	256.327	.276	.285048	.298418	268.532	264.894	.303	.288680	.302405	12
13	281.095	277.861	.269	.333905	.347630	290.512	286.935	.298	.338120	.352238	13
14	302.687	299.513	.265	.381302	.395420	312.597	309.064	.294	.386176	.400725	14
15	324.383	321.251	.261	1.427604	1.442153	334.759	331.259	.292	1.433208	1.448226	15
16	346.153	343.055	.258	.473124	.488142	356.959	353.465	.291	.479546	.495085	16
17	367.963	364.869	.258	.518148	.533687	379.157	375.653	.292	.525487	.541596	17
18	389.768	386.666	.258	.562943	.579052	401.310	397.772	.295	.571309	.588047	18
19	411.531	408.395	.261	.607761	.624499	423.360	419.753	.301	.617269	.634691	19
20	433.192	429.988	.267	1.652840	1.670262	445.309	441.670	.303	1.663624	1.681805	20
21	454.753	451.518	.270	.698421	.716602	467.124	463.384	.312	.710620	.729621	21
22	476.184	472.849	.278	.744734	.763735	488.716	484.853	.322	.758517	.778435	22
23	497.395	493.940	.288	.792031	.811949	510.060	506.072	.332	.807578	.828489	23
24	518.363	514.784	.298	.840563	.861474	531.126	526.984	.345	.858070	.880077	24
25	539.056	535.327	.311	1.890590	1.912597	551.870	547.561	.359	1.910278	1.933482	25
26	559.435	555.542	.324	.942391	.965595	572.266	567.777	.374	.964494	.989007	26
27	579.472	575.401	.339	.996250	2.020763	592.268	587.564	.392	2.021055	2.047019	27
28	599.120	594.839	.357	2.052499	.078463	611.839	606.919	.410	.080302	.107839	28
29	618.347	613.853	.375	.111476	.139013	630.969	625.823	.429	.142583	.171839	29
30	637.138	632.423	.393	2.173525	2.202781	649.618	644.219	.450	2.208319	2.239476	30
31	655.459	650.494	.414	.239061	.270218	667.761	662.107	.471	.277947	.311170	31
32	673.281	668.067	.434	.308519	.341742	685.385	679.469	.493	.351928	.387411	32
33	690.596	685.123	.456	.382357	.417840	702.479	696.294	.515	.430781	.468737	33
34	707.387	701.651	.478	.461089	.499045	719.042	712.594	.537	.515055	.555701	34
35	723.658	717.664	.500	2.545264	2.585910	735.069	728.349	.560	2.605386	2.648992	35
36	739.403	733.141	.522	.635514	.679120	750.588	743.633	.580	.702416	.749208	36
37	754.649	748.155	.541	.732479	.779271	765.636	758.443	.599	.806893	.857204	37
38	769.430	762.704	.560	.836904	.887215	780.267	772.897	.614	.919623	.973727	38
39	783.804	776.903	.575	.949594	3.003698	794.634	787.176	.621	3.041402	3.099595	39
40	797.917	790.930	.582	3.071343	3.129536	808.875	801.379	.625	3.173332	3.236095	40
41	811.906	804.882	.585	.203250	.266013	823.313	816.052	.605	.316352	.383885	41
42	826.090	819.297	.566	.346253	.413786	837.140	829.032	.676	.475762	.551432	42
43	839.673	832.047	.636	.505651	.581321	849.151	840.075	.756	.656718	.741317	43

	46.	$\pi = 28.0014.$		47.	$\pi = 29.1948.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 48. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	49. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
0	24.784	19.108	.473	0.011464	0.022634	25.844	19.885	.497	0.011610	0.022918	0
1	44.091	38.614	.456	.324105	.335413	45.919	40.149	.481	.324412	.335873	1
2	63.782	58.490	.441	.512114	.523575	66.366	60.781	.465	.512607	.524236	2
3	83.840	78.730	.426	.649307	.660936	87.177	81.769	.451	.650009	.661822	3
4	104.253	99.315	.412	.758835	.770648	108.331	103.090	.437	.759776	.771790	4
5	125.001	120.228	.398	0.851031	0.863045	129.808	124.724	.424	0.852241	0.864476	5
6	146.069	141.449	.385	.931423	.943658	151.581	146.635	.412	.932943	.945425	6
7	167.425	162.941	.374	1.003337	1.015819	173.624	168.809	.401	1.005208	1.017956	7
8	189.046	184.691	.363	.068933	.081681	195.905	191.198	.392	.071198	.084246	8
9	210.902	206.653	.354	.129703	.142751	218.396	213.791	.384	.132416	.145786	9
10	232.963	228.814	.346	1.186735	1.200105	241.075	236.556	.377	1.189945	1.203670	10
11	255.209	251.144	.339	.240843	.254568	263.903	259.447	.371	.244617	.258735	11
12	277.601	273.598	.334	.292679	.306797	286.839	282.429	.368	.297088	.311637	12
13	300.099	296.140	.330	.342768	.357317	309.856	305.480	.365	.347885	.362903	13
14	322.676	318.751	.327	.391542	.406560	332.913	328.542	.364	.397454	.412993	14
15	345.291	341.372	.327	1.439382	1.454921	355.965	351.585	.365	1.446188	1.462297	15
16	367.904	363.975	.327	.486625	.502734	378.972	374.557	.368	.494432	.511170	16
17	390.471	386.508	.330	.533581	.550319	401.873	397.385	.374	.542504	.559926	17
18	412.934	408.900	.336	.580532	.597954	424.667	420.147	.377	.590704	.608885	18
19	435.294	431.227	.339	.627755	.645936	447.324	442.697	.386	.639316	.658317	19
20	457.517	453.347	.347	1.675512	1.694513	469.747	464.995	.396	1.688628	1.708546	20
21	479.512	475.218	.358	.724078	.743996	491.915	487.031	.407	.738930	.759841	21
22	501.256	496.833	.369	.773726	.794637	513.791	508.749	.420	.790508	.812515	22
23	522.715	518.137	.382	.824732	.846739	535.336	530.120	.435	.843667	.866871	23
24	543.848	539.099	.396	.877391	.900595	556.519	551.115	.450	.898710	.923223	24
25	564.626	559.693	.411	1.932000	1.956513	577.292	571.665	.469	1.955992	1.981956	25
26	585.001	579.849	.429	.988903	2.014867	597.617	591.766	.488	2.015862	2.043399	26
27	604.938	599.567	.448	2.048447	.075984	617.484	611.399	.507	.078682	.107938	27
28	624.425	618.824	.467	.110984	.140240	636.853	630.504	.529	.144877	.176034	28
29	643.424	637.564	.488	.176939	.208096	655.694	649.082	.551	.214897	.248120	29
30	661.906	655.787	.510	2.246754	2.279977	673.999	667.113	.574	2.289207	2.324690	30
31	679.860	673.474	.532	.320892	.356375	691.751	684.586	.597	.368335	.406291	31
32	697.273	690.613	.555	.399876	.437832	708.952	701.515	.620	.452837	.493483	32
33	714.146	707.219	.577	.484258	.524904	725.598	717.877	.643	.543353	.586959	33
34	730.473	723.268	.600	.574678	.618284	741.715	733.750	.664	.640532	.687324	34
35	746.283	738.838	.620	2.671779	2.718571	757.342	749.131	.684	2.745128	2.795439	35
36	761.612	753.925	.641	.776312	.826623	772.538	764.143	.700	.857950	.912054	36
37	776.517	768.650	.656	.889086	.943190	787.459	778.972	.707	.979799	3.037992	37
38	791.153	783.195	.663	3.010899	3.069092	802.249	793.722	.711	3.111782	.174545	38
39	805.660	797.664	.666	.142855	.205618	817.243	808.961	.690	.254840	.322373	39
40	820.368	812.612	.646	3.285893	3.353426	831.602	822.441	.763	3.414277	3.489947	40
41	834.453	825.834	.718	.445315	.520985	844.077	833.910	.847	.595252	.679851	41
42	846.689	837.084	.800	.626281	.710880	855.176	844.638	.878	.797429	.889806	42
43	857.576	847.607	.831	.828452	.920829	865.710	854.979	.894	4.020868	4.121378	43

48.   π = 30.4602.   **49.**   π = 31.8029.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	50. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	51. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	26.952	20.675	.523	0.011770	0.023231	28.120	21.497	.552	0.011951	0.023580	0
1	47.815	41.727	.507	.324751	.336380	49.800	43.361	.537	.325123	.336936	1
2	69.047	63.139	.492	.513148	.524961	71.838	65.574	.522	.513741	.525755	2
3	90.630	84.893	.478	.650780	.662794	94.215	88.113	.509	.651626	.663861	3
4	112.543	106.966	.465	.760807	.773042	116.897	110.940	.496	.761945	.774427	4
5	134.758	129.321	.453	0.853574	0.866056	139.862	134.042	.485	0.855044	0.867792	5
6	157.247	151.945	.442	.934618	.947366	163.076	157.368	.476	.936462	.949510	6
7	179.981	174.789	.433	1.007268	1.020316	186.508	180.905	.467	1.009539	1.022909	7
8	202.928	197.840	.424	.073696	.087066	210.135	204.623	.459	.076441	.090166	8
9	226.068	221.067	.417	.135399	.149124	233.918	228.471	.454	.138685	.152803	9
10	249.358	244.422	.411	1.193480	1.207598	257.813	252.414	.450	1.197378	1.211927	10
11	272.760	267.870	.408	.248778	.263327	281.793	276.429	.447	.253358	.268376	11
12	296.244	291.389	.405	.301944	.316962	305.813	300.456	.446	.307294	.322833	12
13	319.768	314.919	.404	.353523	.369062	329.831	324.463	.447	.359739	.375848	13
14	343.288	338.430	.405	.403973	.420082	353.801	348.396	.450	.411161	.427899	14
15	366.763	361.867	.408	1.453693	1.470431	377.659	372.179	.457	1.461968	1.479390	15
16	390.127	385.159	.414	.503039	.520461	401.407	395.893	.459	.512535	.530716	16
17	413.384	408.382	.417	.552346	.570527	425.011	419.387	.469	.563198	.582199	17
18	436.501	431.391	.426	.601920	.620921	448.373	442.617	.480	.614295	.634213	18
19	459.379	454.140	.437	.652071	.671989	471.467	465.575	.491	.666150	.687061	19
20	481.996	476.624	.448	1.703104	1.724015	494.259	488.201	.505	1.719079	1.741086	20
21	504.318	498.783	.461	.755319	.777326	516.704	510.466	.520	.773414	.796618	21
22	526.299	520.587	.476	.809033	.832237	538.774	532.339	.536	.829479	.853992	22
23	547.911	542.008	.492	.864560	.889073	560.414	553.748	.556	.887644	.913608	23
24	569.105	562.974	.511	.922260	.948224	581.591	574.691	.575	.948279	.975816	24
25	589.843	583.484	.530	1.982493	2.010030	602.288	595.144	.595	2.011752	2.041008	25
26	610.114	603.515	.550	2.045624	.074880	622.467	615.048	.618	.078508	.109665	26
27	629.875	623.007	.572	.112085	.143242	642.097	634.403	.641	.149002	.182225	27
28	649.098	641.962	.595	.182329	.215552	661.167	653.189	.665	.223712	.259195	28
29	667.775	660.359	.618	.256830	.292313	679.662	671.393	.689	.303173	.341129	29
30	685.887	678.187	.642	2.336116	2.374072	697.582	689.030	.713	2.387949	2.428595	30
31	703.437	695.459	.665	.420748	.461394	714.925	706.077	.737	.478689	.522295	31
32	720.420	712.153	.689	.511371	.554977	731.716	722.614	.758	.576049	.622841	32
33	736.865	728.349	.710	.608637	.655429	747.997	738.638	.780	.680786	.731097	33
34	752.809	744.041	.731	.713299	.763610	763.829	754.277	.796	.793719	.847823	34
35	768.313	759.358	.746	2.826174	2.880278	779.372	769.726	.804	2.915653	2.973846	35
36	783.537	774.487	.754	.948064	3.006257	794.781	785.094	.807	3.047699	3.110462	36
37	798.626	789.537	.757	3.080077	.142840	810.404	800.971	.786	.190804	.258337	37
38	813.925	805.086	.737	.223157	.290690	825.363	815.014	.862	.350273	.425943	38
39	828.576	818.838	.811	.382610	.458280	838.360	826.963	.950	.531271	.615870	39
40	841.304	830.541	.897	3.563596	3.648195	849.922	838.140	.982	3.733462	3.825839	40
41	852.627	841.486	.928	.765780	.858157	860.898	848.913	.999	.956910	4.057420	41
42	863.376	852.037	.945	.989223	4.089733	871.393	859.132	1.022	4.204932	.314823	42
43	873.655	862.045	.968	4.237242	.347133	881.483	869.091	1.033	.481379	.601459	43

50.   π = 33.2283.   **51.**   π = 34.7419.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	x = 52. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	53. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	29.347	22.344	.584	0.012143	0.023956	30.640	23.219	.618	0.012355	0.024369	0
1	51.870	45.045	.569	.325528	.337542	54.029	46.780	.604	.325974	.338209	1
2	74.737	68.079	.555	.514390	.526625	77.741	70.642	.592	.515109	.527591	2
3	97.918	91.408	.543	.652558	.665040	101.747	94.791	.580	.653587	.666335	3
4	121.388	115.017	.531	.763199	.775947	126.012	119.174	.570	.764580	.777628	4
5	145.111	138.856	.521	0.856661	0.869709	150.507	143.779	.561	0.858445	0.871815	5
6	169.058	162.910	.512	.938495	.951865	175.205	168.571	.553	.940729	.954454	6
7	193.205	187.149	.505	1.012034	1.025759	200.066	193.501	.547	1.014782	1.028900	7
8	217.510	211.521	.499	.079464	.093582	225.045	218.529	.543	.082798	.097347	8
9	241.930	235.990	.495	.142307	.156856	250.110	243.632	.540	.146295	.161313	9
10	266.437	260.533	.492	1.201669	1.216687	275.220	268.748	.539	1.206397	1.221936	10
11	290.985	285.087	.491	.258404	.273943	300.326	293.843	.540	.263967	.280076	11
12	315.529	309.622	.492	.313191	.329300	325.382	318.861	.543	.319696	.336434	12
13	340.026	334.080	.496	.366593	.383331	350.321	343.722	.550	.374152	.391574	13
14	364.408	358.386	.502	.419086	.436508	375.147	368.511	.553	.427831	.446012	14
15	388.679	382.621	.505	1.471097	1.489278	399.820	393.069	.563	1.481162	1.500163	15
16	412.801	406.631	.514	.523003	.542004	424.240	417.352	.574	.534556	.554474	16
17	436.676	430.371	.525	.575172	.595090	448.382	441.351	.586	.588392	.609303	17
18	460.277	453.834	.537	.627954	.648865	472.207	465.003	.600	.643034	.665041	18
19	483.571	476.957	.551	.681688	.703695	495.670	488.277	.616	.698847	.722051	19
20	506.509	499.711	.567	1.736718	1.759922	518.739	511.142	.633	1.756189	1.780702	20
21	529.063	522.065	.583	.793385	.817898	541.362	533.521	.653	.815454	.841418	21
22	551.179	543.944	.603	.852069	.878033	563.497	555.413	.674	.877034	.904571	22
23	572.821	565.347	.623	.913151	.940688	585.133	576.794	.695	.941318	.970574	23
24	593.973	586.250	.644	.977007	2.006263	606.227	597.600	.719	2.008763	2.039920	24
25	614.596	606.591	.667	2.044089	2.075246	626.746	617.832	.743	2.079840	2.113063	25
26	634.656	626.371	.690	.114858	.148081	646.681	637.469	.768	.155039	.190522	26
27	654.145	645.570	.715	.189801	.225284	666.013	656.498	.793	.234907	.272863	27
28	673.047	664.173	.739	.269455	.307411	684.747	674.935	.818	.320019	.360665	28
29	691.360	682.198	.764	.354390	.395036	702.874	692.754	.843	.411032	.454638	29
30	709.084	699.619	.789	2.445260	2.488866	720.428	710.041	.866	2.508611	2.555403	30
31	726.244	716.520	.810	.542723	.589515	737.446	726.791	.888	.613522	.663833	31
32	742.883	732.896	.832	.647543	.697854	753.995	743.140	.905	.726589	.780693	32
33	759.063	748.879	.849	.760540	.814644	770.245	759.289	.913	.848626	.906819	33
34	774.948	764.667	.857	.882523	.940716	786.351	775.353	.917	.980750	3.043513	34
35	790.694	780.372	.860	3.014606	3.077369	802.681	791.949	.894	3.123910	3.191443	35
36	806.660	796.598	.838	.157737	.225270	818.319	806.629	.974	.283420	.359090	36
37	821.949	810.950	.917	.317225	.392895	831.904	819.120	1.065	.464444	.549043	37
38	835.231	823.162	1.006	.498236	.582835	843.992	830.803	1.099	.666653	.759030	38
39	847.048	834.584	1.039	.700435	.792812	855.464	842.065	1.117	.890112	.990622	39
40	858.264	845.594	1.056	3.923888	4.024398	866.436	852.747	1.141	4.138140	4.248031	40
41	868.991	856.038	1.079	4.171913	.281804	876.982	863.157	1.152	.414590	.534670	41
42	879.301	866.214	1.091	.448362	.568442	887.874	874.531	1.112	.722205	.852747	42
43	889.949	877.334	1.051	.755976	.886518	898.602	884.614	1.166	5.077717	5.225174	43
44	900.438	887.192	1.104	5.111488	5.258945						44

| 52. | $\pi = 36.3501.$ | 53. | $\pi = 38.0599.$ |

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	54.					55.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ (Bƒ). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ (Bƒ). 6m.	λB. 12m.	
0	32.000	24.121	.657	0.012590	0.024825	33.424	25.033	.699	0.012851	0.025333	0
1	56.275	48.550	.644	.326471	.338953	58.608	50.367	.687	.327016	.339764	1
2	80.851	73.273	.632	.515902	.528650	84.064	75.947	.676	.516776	.529824	2
3	105.694	98.236	.621	.654721	.667769	109.761	101.759	.667	.655969	.669339	3
4	130.771	123.426	.612	.766103	.779473	135.671	127.768	.659	.767775	.781500	4
5	156.056	148.807	.604	0.860405	0.874130	161.752	153.921	.653	0.862562	0.876680	5
6	181.507	174.329	.598	.943189	.957307	187.956	180.177	.648	.945901	.960450	6
7	207.080	199.952	.594	1.017813	1.032362	214.253	206.513	.645	1.021148	1.036166	7
8	232.742	225.652	.591	.086468	.101486	240.594	232.861	.644	.090511	.106050	8
9	258.448	251.365	.590	.150690	.166229	266.932	259.188	.645	.155532	.171641	9
10	284.150	277.057	.591	1.211610	1.227719	293.218	285.433	.649	1.217360	1.234098	10
11	309.803	302.669	.595	.270105	.286843	319.381	311.514	.656	.276869	.294291	11
12	335.334	328.121	.601	.326868	.344290	345.425	337.520	.659	.334781	.352962	12
13	360.750	353.499	.604	.382491	.400672	371.309	363.284	.669	.391685	.410686	13
14	386.010	378.642	.614	.437472	.456473	396.929	388.758	.681	.448111	.468029	14
15	411.011	403.502	.626	1.492270	1.512188	422.254	413.935	.693	1.504537	1.525448	15
16	435.726	428.071	.638	.547312	.568223	447.249	438.748	.708	.561391	.583398	16
17	460.118	452.286	.653	.602984	.624991	471.863	463.163	.725	.619102	.642306	17
18	484.139	476.112	.669	.659685	.682889	496.064	487.150	.743	.678070	.702583	18
19	507.756	499.521	.686	.717790	.742303	519.796	510.628	.764	.738731	.764695	19
20	530.916	522.432	.707	1.777712	1.803676	543.019	533.594	.785	1.801501	1.829038	20
21	553.577	544.844	.728	.839851	.867388	565.716	556.024	.808	.866797	.896053	21
22	575.729	566.734	.750	.904610	.933866	587.846	577.852	.833	.935103	.966260	22
23	597.323	588.034	.774	.972462	2.003619	609.372	599.077	.858	2.006903	2.040126	23
24	618.331	608.748	.799	2.043879	.077102	630.284	619.677	.884	.082711	.118194	24
25	638.739	628.851	.824	2.119367	2.154850	650.566	639.640	.910	2.163082	2.201038	25
26	658.531	648.333	.850	.199471	.237427	670.219	658.982	.936	.248609	.289255	26
27	677.710	667.208	.875	.284780	.325426	689.236	677.676	.963	.339957	.383563	27
28	696.269	685.450	.902	.375951	.419557	707.651	695.811	.987	.437805	.484597	28
29	714.238	703.148	.924	.473657	.520449	725.505	713.383	1.010	.542930	.593241	29
30	731.662	720.296	.947	2.578669	2.628980	742.866	730.534	1.028	2.656166	2.710270	30
31	748.604	737.034	.964	.691818	.745922	759.912	747.476	1.036	.778327	.836520	31
32	765.240	753.567	.973	.813912	.872105	776.810	764.328	1.040	.910546	.973309	32
33	781.730	770.013	.976	.946081	3.008844	793.941	781.739	1.017	3.053775	3.121308	33
34	798.448	787.004	.954	3.089275	.156808	810.346	797.139	1.101	.213334	.289004	34
35	814.457	802.032	1.035	3.248807	3.324477	824.599	810.243	1.196	3.394392	3.478991	35
36	828.386	814.820	1.129	.429848	.514447	837.279	822.500	1.232	.596622	.688999	36
37	840.740	826.781	1.163	.632067	.724444	849.314	834.314	1.250	.820094	.920604	37
38	852.485	838.310	1.181	.855532	.956042	860.825	845.521	1.275	4.068129	4.178020	38
39	863.718	849.247	1.206	4.103563	4.213454	871.889	856.441	1.287	.344586	.464666	39
40	874.515	859.904	1.218	4.380017	4.500097	883.314	868.373	1.245	4.652202	4.782744	40
41	885.665	871.548	1.176	.687632	.818174	894.570	878.951	1.302	5.007715	5.155172	41
42	896.649	881.871	1.231	5.043145	5.190602	907.380	893.993	1.116	.410448	.570149	42

54. $\pi = 39.8789$.   **55.** $\pi = 41.8154$.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 56.$ V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	57. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	34.930	25.984	.745	0.013135	0.025883	36.505	26.937	.797	0.013452	0.026500	0
1	61.041	52.221	.735	.327616	.340664	63.564	54.118	.787	.328277	.341647	1
2	87.396	78.696	.725	.517736	.531106	90.849	81.507	.779	.518790	.532515	2
3	113.973	105.373	.717	.657338	.671063	118.314	109.047	.772	.658846	.672964	3
4	140.723	132.197	.711	.769614	.783732	145.907	136.695	.751	.771642	.786191	4
5	167.600	159.128	.706	0.864939	0.879488	173.598	164.428	.768	0.867556	0.882574	5
6	194.572	186.139	.703	.948885	.963903	201.338	192.174	.764	.952172	.967711	6
7	221.589	213.164	.702	1.024822	1.040361	229.072	219.897	.765	1.028870	1.044979	7
8	248.604	240.167	.703	.094965	.111074	256.752	247.534	.768	.099880	.116618	8
9	275.564	267.086	.706	.160875	.177613	284.302	274.998	.775	.166762	.184184	9
10	302.400	293.837	.714	1.223696	1.241118	311.727	302.383	.779	1.230688	1.248869	10
11	329.111	320.510	.717	.284333	.302514	338.985	329.514	.789	.292560	.311561	11
12	355.661	346.936	.727	.343503	.362504	365.963	356.339	.802	.353131	.373049	12
13	381.938	373.064	.740	.401831	.421749	392.632	382.851	.815	.413038	.433949	13
14	407.914	398.887	.752	.459862	.480773	418.952	408.980	.831	.472832	.494839	14
15	433.550	424.337	.768	1.518076	1.540083	444.872	434.691	.848	1.533034	1.556238	15
16	458.796	449.380	.785	.576944	.600148	470.357	459.950	.867	.594117	.618630	16
17	483.620	473.983	.803	.636897	.661410	495.348	484.673	.889	.656575	.682539	17
18	507.961	498.063	.825	.698397	.724361	519.801	508.857	.912	.720871	.748408	18
19	531.779	521.619	.847	.761881	.789418	543.704	532.477	.936	.787461	.816717	19
20	555.060	544.625	.870	1.827783	1.857039	567.006	555.462	.962	1.856856	1.888013	20
21	577.757	567.013	.895	.896600	.927757	589.674	577.813	.988	.929573	.962796	21
22	599.836	588.783	.921	.968831	2.002054	611.696	599.506	1.016	2.006144	2.041627	22
23	621.285	609.912	.948	2.044998	.080481	633.053	620.528	1.044	.087148	.125104	23
24	642.088	630.388	.975	.125667	.163623	653.748	640.895	1.071	.173193	.213839	24
25	662.245	650.226	1.002	2.211438	2.252084	673.774	660.580	1.099	2.264962	2.308568	25
26	681.751	669.400	1.029	.302984	.346590	693.165	679.677	1.124	.363147	.409939	26
27	700.638	688.000	1.053	.400991	.447783	711.966	698.181	1.149	.468538	.518849	27
28	718.950	706.024	1.077	.506242	.556553	730.248	716.242	1.167	.581980	.636084	28
29	736.758	723.615	1.095	.619575	.673679	748.198	734.082	1.176	.704299	.762492	29
30	754.241	740.992	1.104	2.741811	2.800004	765.992	751.828	1.180	2.836635	2.899398	30
31	771.573	758.277	1.108	.874085	.936848	784.032	770.163	1.156	.979950	3.047483	31
32	789.144	776.135	1.084	3.017354	3.084887	801.308	786.380	1.244	3.139570	.215240	32
33	805.971	791.931	1.170	.176942	.252612	816.316	800.179	1.345	.320669	.405268	33
34	820.589	805.371	1.268	.358020	.442619	829.668	813.085	1.382	.522925	.615302	34
35	833.594	817.942	1.304	3.560262	3.652639	842.342	825.526	1.401	3.746413	3.846923	35
36	845.939	830.060	1.323	.783742	.884252	854.464	837.328	1.428	.994458	4.104349	36
37	857.745	841.554	1.349	4.031781	4.141672	866.114	848.827	1.441	4.270920	.391000	37
38	869.093	852.755	1.361	.308241	.428321	878.146	861.392	1.396	.578540	.709082	38
39	880.812	864.994	1.318	.615858	.746400	889.998	872.531	1.456	.934054	5.081511	39
40	892.357	875.843	1.376	4.971372	5.118829	903.488	888.371	1.260	5.336787	5.496488	40
41	905.496	891.272	1.185	5.374105	.533806	924.955	915.465	0.791	.810356	.990643	41
42	926.405	917.662	0.729	.847673	6.027960						

56.	$\pi = 43.8764.$	57.	$\pi = 46.0730.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	58. π = 48.4132.					59. π = 50.9095.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	38.173	27.933	.853	0.013795	0.027165	39.933	28.956	.915	0.014173	0.027898	0
1	66.213	56.080	.844	.328998	.342723	68.969	58.071	.908	.329795	.343913	1
2	94.438	84.383	.838	.519949	.534067	98.141	87.302	.903	.521229	.535778	2
3	122.797	112.797	.833	.660507	.675056	127.417	116.621	.900	.662336	.677354	3
4	151.253	141.297	.830	.773873	.788891	156.742	145.954	.899	.776330	.791869	4
5	179.761	169.811	.829	0.870437	0.885976	186.064	175.264	.900	0.873613	0.889722	5
6	208.263	198.302	.830	.955794	.971903	215.328	204.482	.904	.959790	.976528	6
7	236.709	226.704	.834	1.033336	1.050074	244.455	233.518	.911	1.038258	1.055680	7
8	265.023	254.928	.841	.105296	.122718	273.449	262.469	.915	.111272	.129453	8
9	293.206	283.071	.845	.173258	.191439	302.265	291.152	.926	.180419	.199420	9
10	321.218	310.953	.855	1.238395	1.257396	330.788	319.513	.940	1.246903	1.266821	10
11	348.944	338.521	.869	.301642	.321560	358.982	347.541	.953	.311673	.332584	11
12	376.350	365.767	.882	.363764	.384675	386.808	375.165	.970	.375503	.397510	12
13	403.400	392.619	.898	.425408	.447415	414.211	402.347	.989	.439074	.462278	13
14	430.037	419.042	.916	.487160	.510364	441.154	429.051	1.009	.502984	.527497	14
15	456.227	445.000	.936	1.549549	1.574062	467.575	455.189	1.032	1.567818	1.593782	15
16	481.910	470.407	.959	.613109	.639073	493.428	480.757	1.056	.634113	.661650	16
17	507.041	495.261	.982	.678334	.705871	518.697	505.728	1.081	.702384	.731640	17
18	531.604	519.535	1.006	.745707	.774963	543.333	530.028	1.109	.773188	.804345	18
19	555.552	543.156	1.033	.815760	.846917	567.298	553.658	1.137	.847083	.880306	19
20	578.848	566.126	1.060	1.889028	1.922251	590.580	576.592	1.166	1.924631	1.960114	20
21	601.479	588.419	1.088	.966056	2.001539	613.159	598.816	1.195	2.006442	2.044398	21
22	623.427	610.023	1.117	2.047438	.085394	635.038	620.349	1.224	.093147	.133793	22
23	644.695	630.954	1.145	.133793	.174439	656.210	641.161	1.254	.185449	.229055	23
24	665.276	651.184	1.174	.225812	.269418	676.710	661.350	1.280	.284061	.330853	24
25	685.203	670.810	1.199	2.324197	2.370989	696.587	680.913	1.306	2.389788	2.440099	25
26	704.525	689.826	1.225	.429746	.480057	715.915	700.007	1.326	.503491	.557595	26
27	723.313	708.387	1.244	.543311	.597415	734.892	718.868	1.335	.626008	.684201	27
28	741.760	726.721	1.253	.665723	.723916	753.704	737.629	1.340	.758492	.821255	28
29	760.046	744.958	1.257	2.798128	.860891	772.776	757.013	1.314	.901915	.969448	29
30	778.586	763.800	1.232	2.941494	3.009027	791.040	774.158	1.407	3.061611	3.137281	30
31	796.339	780.466	1.323	3.101150	.176820	806.907	788.746	1.513	.242761	.327360	31
32	811.763	794.647	1.426	.282273	.366872	821.024	802.391	1.553	.445051	.537428	32
33	825.486	807.911	1.465	.484545	.576922	834.422	815.544	1.573	.668560	.769070	33
34	838.510	820.696	1.484	.708043	.808553	847.237	828.020	1.601	.916617	4.026508	34
35	850.966	832.824	1.512	3.956094	4.065985	859.554	840.178	1.615	4.193086	4.313166	35
36	862.940	844.642	1.525	4.232559	.352639	872.275	853.462	1.568	.500710	.631252	36
37	875.305	857.555	1.480	.540181	.670723	884.805	865.238	1.631	.856225	5.003682	37
38	887.485	869.002	1.540	.895695	5.043152						

51.

50.

	58 cols					50.					
						903.790	891.899	.991	5.176810	5.324267	46
45	902.165	889.617	1.046	5.144503	5.291960	893.739	882.453	.941	4.821300	4.951842	45
44	891.902	879.971	.994	4.788992	4.919534	883.535	871.797	.978	.513687	.633767	44

51. π = 34.7419.　　**50.** π = 33.2283.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years n.	x = 60. π = 53.5745.					61. π = 56.4196.					Policy Years n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	41.779	29.984	.983	0.014592	0.028710	43.727	31.033	1.058	0.015054	0.029603	0
1	71.822	60.086	.978	.330676	.345225	74.806	62.159	1.054	.331641	.346659	1
2	101.970	90.279	.974	.522636	.537654	105.940	93.301	1.053	.524183	.539722	2
3	132.170	120.487	.974	.664348	.679887	137.069	124.418	1.054	.666567	.682676	3
4	162.366	150.671	.975	.779039	.795148	168.138	155.437	1.058	.782025	.798763	4
5	192.502	180.760	.979	0.877116	0.893854	199.060	186.263	1.066	0.880975	0.898397	5
6	222.498	210.662	.986	.964193	.981615	229.841	217.000	1.070	.969050	.987231	6
7	252.357	240.477	.990	1.043688	1.061869	260.436	247.451	1.082	1.049671	1.068672	7
8	282.033	270.015	1.001	.117859	.136860	290.715	277.560	1.096	.125128	.145046	8
9	311.405	299.221	1.015	.188323	.208241	320.648	307.316	1.111	.197052	.217963	9
10	340.440	328.085	1.030	1.256299	1.277210	350.190	336.643	1.129	1.266672	1.288679	10
11	369.096	356.533	1.047	.322746	.344753	379.282	365.501	1.148	.334978	.358182	11
12	397.316	384.526	1.066	.388471	.411675	407.886	393.852	1.170	.402793	.427306	12
13	425.063	412.026	1.086	.454167	.478680	435.936	421.600	1.195	.470862	.496826	13
14	452.272	438.943	1.111	.520487	.546451	463.382	448.744	1.220	.539848	.567385	14
15	478.895	465.273	1.135	1.588023	1.615560	490.210	475.255	1.246	1.610360	1.639616	15
16	504.918	490.989	1.161	.657331	.686587	516.364	501.053	1.276	.683027	.714184	16
17	530.288	516.014	1.190	.728998	.760155	541.806	526.140	1.305	.758466	.791689	17
18	554.968	540.348	1.218	.803611	.836834	566.524	550.488	1.336	.837290	.872773	18
19	578.944	563.966	1.248	.881753	.917236	590.496	574.083	1.368	.920149	.958105	19
20	602.197	586.854	1.279	1.964052	2.002008	613.723	596.943	1.398	2.007708	2.048354	20
21	624.729	609.029	1.308	2.051156	.091802	636.200	619.038	1.430	.100699	.144305	21
22	646.531	630.460	1.339	.143780	.187386	657.965	640.472	1.458	.199859	.246651	22
23	667.643	651.252	1.366	.242648	.289440	679.067	661.241	1.486	.306018	.356329	23
24	688.112	671.398	1.393	.348577	.398888	699.586	681.512	1.506	.420055	.474159	24
25	708.017	691.061	1.413	2.462436	2.516540	719.734	701.536	1.516	2.542825	2.601018	25
26	727.560	710.485	1.423	.585071	.643264	739.705	721.454	1.521	.675498	.738261	26
27	746.932	729.806	1.427	.717644	.780407	759.953	742.032	1.493	.819059	.886592	27
28	766.574	749.767	1.401	.861132	.928665	779.343	760.234	1.592	.978853	3.054523	28
29	785.382	767.423	1.497	3.020874	3.096544	796.188	775.722	1.706	3.160070	.244669	29
30	801.722	782.447	1.606	3.202055	3.286654	811.175	790.208	1.747	3.362403	3.454780	30
31	816.260	796.499	1.647	.404365	.496742	825.400	804.172	1.769	.585938	.686448	31
32	830.058	810.043	1.668	.627887	.728397	839.005	817.417	1.799	.834011	.943902	32
33	843.254	822.892	1.697	.875951	.985842	852.081	830.325	1.813	4.110487	4.230567	33
34	855.939	835.412	1.711	4.152423	4.272503	865.586	844.427	1.763	.418116	.548658	34
35	869.039	849.092	1.662	4.460049	4.590591	878.888	856.929	1.830	4.773633	4.921090	35
36	881.943	861.219	1.727	.815565	.963022			**48.**			
			49.			906.763	896.073	.891	5.239465	5.386922	48
47	905.321	894.049	.939	5.208451	5.355908	897.099	886.992	.842	4.883955	.014497	47
46	895.469	884.790	.890	4.852941	4.983483	887.290	876.747	.879	.576344	4.696424	46
45	885.469	874.346	.927	.545329	.665409	877.791	867.372	.868	.299901	.409792	45
44	875.785	864.788	.916	.268885	.378776	867.908	857.750	.847	.051887	.152397	44
			49.	π = 31.8029.				**48.**	π = 30.4602.		

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	62. π = 59.4582.					63. π = 62.7079.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	45.791	32.123	1.139	0.015557	0.030575	47.957	33.206	1.229	0.016117	0.031656	0
1	77.922	64.263	1.138	.332703	.348242	81.150	66.385	1.230	.333876	.349985	1
2	110.048	96.375	1.139	.525890	.541999	114.276	99.460	1.235	.527773	.544511	2
3	142.110	128.388	1.144	.669013	.685751	147.249	132.329	1.243	.671708	.689130	3
4	174.024	160.202	1.152	.785315	.802737	180.070	165.103	1.247	.788943	.807124	4
5	205.791	191.922	1.156	0.885232	0.903413	212.691	197.572	1.260	0.889920	0.908921	5
6	237.365	223.349	1.168	.974401	.993402	244.979	229.677	1.275	.980304	1.000222	6
7	268.614	254.422	1.183	1.056274	1.076192	276.895	261.406	1.291	1.063566	.084477	7
8	299.506	285.132	1.198	.133156	.154067	308.396	292.677	1.310	.142016	.164023	8
9	329.994	315.398	1.216	.206687	.228694	339.416	323.447	1.331	.217330	.240534	9
10	360.018	345.180	1.236	1.278129	1.301333	369.915	353.676	1.353	1.290782	1.315295	10
11	389.538	374.438	1.258	.348487	.373000	399.824	383.264	1.380	.363433	.389397	11
12	418.486	403.076	1.284	.418636	.444600	429.090	412.208	1.407	.436163	.463700	12
13	446.812	431.089	1.310	.489331	.516868	457.696	440.476	1.435	.509753	.539009	13
14	474.498	458.449	1.337	.561254	.590510	485.584	467.984	1.467	.584950	.616107	14
15	501.490	485.074	1.368	1.635084	1.666241	512.713	494.733	1.498	1.662469	1.695692	15
16	527.748	510.964	1.399	.711483	.744706	539.068	520.695	1.531	.742997	.778480	16
17	553.257	536.092	1.430	.791095	.826578	564.628	545.853	1.565	.827247	.865203	17
18	577.996	560.442	1.463	.874598	.912554	589.395	570.229	1.597	.915934	.956580	18
19	601.968	584.035	1.494	.962681	2.003327	613.362	593.788	1.631	2.009829	2.053435	19
20	625.165	606.837	1.527	2.056091	2.099697	636.569	616.642	1.661	2.109709	2.156501	20
21	647.626	628.957	1.556	.155586	.202378	659.069	638.788	1.690	.216433	.266744	21
22	669.403	650.391	1.584	.262008	.312319	680.950	660.403	1.712	.330904	.385008	22
23	690.580	671.312	1.606	.376247	.430351	702.432	681.754	1.723	.454006	.512199	23
24	711.374	691.977	1.616	.499172	.557365	723.727	702.992	1.728	.586925	.649688	24
25	731.984	712.533	1.621	2.631959	2.694722	745.318	724.935	1.699	2.730665	2.798198	25
26	752.881	733.771	1.593	.775604	.843137	765.993	744.343	1.804	.890586	.966256	26
27	772.892	752.555	1.695	.935457	3.011127	783.954	760.857	1.925	3.071889	3.156488	27
28	790.276	768.539	1.811	3.116714	.201313	799.934	776.304	1.969	.274279	.366656	28
29	805.743	783.489	1.854	.319074	.411451	815.103	791.193	1.993	.497847	.598357	29
30	820.423	797.900	1.877	3.542624	3.643134	829.608	805.316	2.024	3.745941	3.855832	30
31	834.464	811.570	1.908	.790707	.900598	843.552	819.079	2.039	4.022428	4.142508	31
32	847.959	824.890	1.922	4.067188	4.187268	857.951	834.116	1.986	.330062	.460604	32
33	861.897	839.445	1.871	.374819	.505361	872.136	847.447	2.057	.685583	.833040	33
34	875.625	852.347	1.940	.730338	.877795						34

46.

	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n.
	909.402	899.781	.802	5.299758	5.447215	50
	900.085	891.023	.755	4.944248	5.074790	49
	890.624	881.145	.790	.636639	4.756719	48
	881.465	872.103	.780	.360198	.470089	47
	871.935	862.825	.759	.112187	.212697	46
	861.970	853.044	.744	3.888759	3.981136	45
	851.472	842.896	.715	3.686599	3.771198	44

47.

n.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.
49	908.121	897.981	.845	5.269889	5.417346
48	898.636	889.067	.797	4.914379	.044921
47	889.006	879.010	.833	.606769	4.726849
46	879.682	869.807	.823	.330327	.440218
45	869.981	860.362	.802	.082315	.182825
44	859.838	850.405	.786	3.858883	3.951260

47. π = 29.1948.   **46.** π = 28.0014.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 64.$ $\pi = 66.1832.$ V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	65. $\pi = 69.9017.$ V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	50.251	34.318	1.328	0.016730	0.032839	52.665	35.427	1.437	0.017409	0.034147	0
1	84.515	68.530	1.332	.335169	.351907	87.981	70.634	1.446	.336590	.354012	1
2	118.621	102.528	1.341	.529844	.547266	123.137	105.737	1.450	.532128	.550309	2
3	152.569	136.427	1.345	.674678	.692859	158.077	140.516	1.463	.677946	.696947	3
4	186.311	170.012	1.358	.792937	.811938	192.661	174.903	1.480	.797339	.817257	4
5	219.707	203.219	1.374	0.895089	0.915007	226.846	208.888	1.496	0.900800	0.921711	5
6	252.720	236.038	1.390	.986824	1.007735	260.586	242.382	1.517	.994016	1.016023	6
7	285.302	268.383	1.410	1.071612	.093619	293.812	275.340	1.539	1.080498	.103702	7
8	317.387	300.209	1.432	.151802	.175006	326.481	307.720	1.563	.162604	.187117	8
9	348.935	331.478	1.455	.229081	.253594	358.517	339.411	1.592	.242082	.268046	9
10	379.872	362.082	1.482	1.304781	1.330745	389.863	370.413	1.621	1.320266	1.347803	10
11	410.142	392.019	1.510	.379966	.407503	420.503	400.691	1.651	.398248	.427504	11
12	439.730	421.258	1.539	.455545	.484801	450.374	430.155	1.685	.477002	.508159	12
13	468.576	449.711	1.572	.532361	.563518	479.431	458.806	1.719	.557408	.590631	13
14	496.636	477.379	1.605	.611199	.644422	507.661	486.614	1.754	.640277	.675760	14
15	523.898	504.233	1.639	1.692801	1.728284	535.039	513.562	1.790	1.726422	1.764378	15
16	550.335	530.255	1.673	.777922	.815878	561.567	539.670	1.825	.816633	.857279	16
17	575.953	555.468	1.707	.867311	.907957	587.238	564.904	1.861	.911746	.955352	17
18	600.744	579.836	1.742	.961768	2.005374	612.095	589.384	1.893	2.012589	2.059381	18
19	624.747	603.475	1.773	2.062093	.108885	636.195	613.104	1.924	.120066	.170377	19
20	648.020	626.382	1.803	2.169165	2.219476	659.631	636.256	1.948	2.235117	2.289221	20
21	670.652	648.739	1.826	.283905	.338009	682.642	659.125	1.960	.358659	.416852	21
22	692.872	670.823	1.837	.407210	.465403	705.450	681.873	1.965	.491905	.554668	22
23	714.899	692.791	1.842	.540281	.603044	728.575	705.376	1.933	.635882	.703415	23
24	737.230	715.487	1.812	.684131	.751664	750.721	726.164	2.046	.795971	.871641	24
25	758.616	735.562	1.921	2.844130	2.919800	769.960	743.853	2.176	2.977388	3.061987	25
26	777.195	752.644	2.046	3.025486	3.110085	787.076	760.398	2.223	3.179852	.272229	26
27	793.723	768.620	2.092	.227910	.320287	803.323	776.345	2.248	.403466	.503976	27
28	809.412	784.021	2.116	.451500	.552010	818.860	791.473	2.282	.651587	.761478	28
29	824.417	798.629	2.149	.699606	.809497	833.794	806.214	2.298	.928088	4.048168	29
30	838.838	812.865	2.164	3.976100	4.096180	849.219	822.321	2.242	4.235729	4.366271	30
31	853.734	828.419	2.110	4.283737	.414279	864.411	836.600	2.318	.591254	.738711	31
32	868.404	842.207	2.183	.639260	.786717						32

45.

n	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.
51	910.611	901.478	.761	5.329103	5.476560
50	901.451	892.869	.715	4.973594	.104136
49	892.151	883.157	.750	4.665985	4.786065
48	883.147	874.269	.740	.389545	.499436
47	873.778	865.148	.719	.141536	.242046
46	863.983	855.533	.704	3.918111	.010488
45	853.663	845.557	.675	.715956	3.800555
44	842.062	834.892	.598	3.535015	3.610685

45. $\pi = 26.8757.$

44.

V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n
911.752	903.080	.723	5.357955	5.505412	52
902.740	894.611	.677	.002446	.132988	51
893.592	885.057	.711	4.694837	4.814917	50
884.734	876.314	.702	4.418398	4.528289	49
875.518	867.341	.681	.170391	.270901	48
865.882	857.882	.667	3.946968	.039345	47
855.729	848.068	.638	.744818	3.829417	46
844.318	837.577	.562	.563883	.639553	45
831.182	825.246	.495	3.404507	3.472040	44

44. $\pi = 25.8133.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years n.	66. π = 73.8817					67. π = 78.1464					Policy Years n.
	V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	
0	55.191	36.499	1.558	0.018151	0.035573	57.956	37.772	1.682	0.018977	0.037158	0
1	91.637	72.893	1.562	.338158	.356339	95.553	75.193	1.697	.339877	.358878	1
2	127.861	108.948	1.576	.534636	.553637	132.763	112.194	1.714	.537400	.557318	2
3	163.714	144.598	1.593	.681545	.701463	169.548	148.762	1.732	.685527	.706438	3
4	199.156	179.832	1.610	.802203	.823114	205.852	184.802	1.754	.807566	.829573	4
5	234.135	214.556	1.632	0.907098	0.929105	241.604	220.265	1.778	0.914052	0.937256	5
6	268.582	248.725	1.655	1.001958	1.025162	276.755	255.105	1.804	1.010719	1.035232	6
7	302.450	282.293	1.680	.090304	.114817	311.225	289.206	1.835	.101154	.127118	7
8	335.662	315.149	1.709	.174556	.200520	344.955	322.563	1.866	.187778	.215315	8
9	368.160	347.289	1.739	.256464	.284001	377.922	355.142	1.898	.272364	.301620	9
10	399.925	378.679	1.771	1.337388	1.366644	410.064	386.845	1.935	1.356348	1.387505	10
11	430.893	409.225	1.806	.418490	.449647	441.329	417.674	1.971	.440919	.474142	11
12	461.018	438.929	1.841	.500777	.534000	471.705	447.596	2.009	.527119	.562602	12
13	490.284	467.758	1.877	.585157	.620640	501.164	476.591	2.048	.615927	.653883	13
14	518.668	495.695	1.914	.672514	.710470	529.707	504.684	2.085	.708260	.748906	14
15	546.170	522.763	1.951	1.763695	1.804341	557.330	531.836	2.125	1.805057	1.848663	15
16	572.784	548.924	1.988	.859579	.903185	584.076	558.176	2.158	.907224	.954016	16
17	598.555	574.303	2.021	.961029	2.007821	610.008	583.699	2.192	2.015731	2.066042	17
18	623.539	598.894	2.054	2.068979	.119290	635.225	608.611	2.218	.131572	.185676	18
19	647.836	622.896	2.078	.184394	.238498	659.984	633.218	2.230	.255712	.313905	19
20	671.692	646.605	2.091	2.308211	2.366404	684.527	657.695	2.236	2.389400	2.452163	20
21	695.338	670.189	2.096	.441661	.504424	709.409	682.984	2.202	.533699	.601232	21
22	719.313	694.555	2.063	.585786	.653319	733.238	705.352	2.324	.694016	.769686	22
23	742.272	716.107	2.180	.745980	.821650	753.939	724.385	2.463	.875587	.960186	23
24	762.217	734.445	2.314	.927468	3.012067	772.356	742.187	2.514	3.078149	3.170526	24
25	779.962	751.597	2.364	3.129977	3.222354	789.837	759.347	2.541	3.301825	3.402335	25
26	796.805	768.131	2.389	.353620	.454130	806.556	775.625	2.578	.549982	.659873	26
27	812.913	783.814	2.425	.601757	.711648	822.625	791.486	2.595	.826502	.946582	27
28	828.397	799.097	2.442	.878267	.998347	839.222	808.817	2.534	4.134153	4.264695	28
29	844.387	815.795	2.383	4.185913	4.316455	855.569	824.181	2.616	.489683	.637140	29
30	860.137	830.598	2.462	4.541440	4.688897						

Policy Years n.	43.					42.					Policy Years n.
54						913.846	906.021	.652	5.414289	5.561746	54
53	912.830	904.593	.686	5.386341	5.533798	905.109	897.809	.608	.058780	.189322	53
52	903.959	896.256	.642	.030832	.161374	896.237	888.545	.641	4.751172	4.871252	52
51	894.953	886.852	.675	4.723224	4.843304	887.648	880.067	.632	.474735	.584626	51
50	886.234	878.245	.666	.446786	.556677	878.712	871.366	.612	.226730	.327240	50
49	877.161	869.412	.646	4.198780	4.299290	869.368	862.194	.598	4.003313	4.095690	49
48	867.676	860.101	.631	3.975360	.067737	859.523	852.679	.570	3.801170	3.885769	48
47	857.681	850.440	.603	.773214	3.857813	848.459	842.505	.496	.620248	.695918	47
46	846.448	840.112	.528	.592286	.667956	835.722	830.549	.431	.460889	.528422	46
45	833.518	827.974	.462	.432918	.500451	822.421	817.032	.449	.317940	.380703	45
44	820.015	814.252	.480	3.289958	3.352721	809.303	803.948	.446	3.186108	3.244301	44
	43. π = 24.8099.					**42.** π = 23.8627.					

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x=68.$ V. 6m.	$\pi=82.7146.$ V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	69. V. 6m.	$\pi=87.6177.$ V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	60.803	38.890	1.826	0.019871	0.038872	63.814	40.009	1.984	0.020877	0.040795	0
1	99.474	77.344	1.844	.341777	.361695	103.588	79.550	2.003	.343875	.364786	1
2	137.703	115.347	1.863	.540461	.561372	142.845	118.521	2.027	.543830	.565837	2
3	175.432	152.802	1.886	.689912	.711919	181.503	156.867	2.053	.694753	.717957	3
4	212.587	189.657	1.911	.813485	.836689	219.512	194.540	2.081	.820009	.844522	4
5	249.118	225.864	1.938	0.921718	0.946231	256.786	231.413	2.114	0.930202	0.956166	5
6	284.942	261.304	1.970	1.020413	1.046377	293.256	267.482	2.148	1.031134	1.058671	6
7	319.994	295.970	2.002	.113155	.140692	328.906	302.711	2.183	.126416	.155672	7
8	354.257	329.828	2.036	.202390	.231646	363.660	336.992	2.222	.218572	.249729	8
9	387.659	362.776	2.074	.289970	.321127	397.469	370.327	2.262	.309480	.342703	9
10	420.153	394.815	2.112	1.377356	1.410579	430.313	402.681	2.303	1.400636	1.436119	10
11	451.721	425.911	2.151	.465773	.501256	462.166	434.034	2.344	.493338	.531294	11
12	482.335	456.045	2.191	.556332	.594288	493.032	464.412	2.385	.588735	.629381	12
13	512.001	485.241	2.230	.650050	.690696	522.901	493.771	2.427	.687936	.731542	13
14	540.707	513.458	2.271	.747937	.791543	551.821	522.253	2.464	.791977	.838769	14
15	568.503	540.833	2.306	1.850956	1.897748	579.861	549.851	2.501	1.901933	1.952244	15
16	595.453	567.358	2.341	.960123	2.010434	607.128	576.788	2.528	2.018880	2.072984	16
17	621.660	593.247	2.368	2.076469	.130573	633.901	603.396	2.542	.143853	.202046	17
18	647.391	618.820	2.381	.200989	.259182	660.439	629.863	2.548	.278157	.340920	18
19	672.896	644.258	2.386	.334959	.397722	687.344	657.208	2.511	.422901	.490434	19
20	698.757	670.540	2.351	2.479462	2.546995	713.111	681.395	2.643	2.583533	2.659203	20
21	723.520	693.786	2.478	.639923	.715593	735.494	701.976	2.793	.765318	.849917	21
22	745.034	713.566	2.622	.821592	.906191	755.410	721.226	2.849	.968018	3.060395	22
23	764.174	732.067	2.676	3.024217	3.116594	774.312	739.780	2.878	3.191778	.292288	23
24	782.341	749.900	2.703	.247932	.348442	792.390	757.381	2.917	.439984	.549875	24
25	799.716	766.817	2.742	3.496111	3.606002	809.765	774.532	2.936	3.716532	3.836612	25
26	816.416	783.301	2.760	.772644	.892724	827.712	793.273	2.870	4.024198	4.154740	26
27	833.664	801.312	2.696	4.080302	4.210844	845.388	809.886	2.960	.379735	.527192	27
28	850.653	817.279	2.781	.435835	.583292						28

41.   **40.**

Policy Years. n.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
						915.718	908.649	.589	5.468963	5.616420	56
55	914.809	907.373	.620	5.441821	5.589278	907.224	900.666	.546	.113454	.243996	55
54	906.197	899.278	.577	5.086313	5.216855	898.601	891.661	.578	4.805847	4.925927	54
53	897.453	890.148	.609	4.778705	4.898785	890.252	883.420	.569	.529411	.639302	53
52	888.988	881.792	.600	.502269	.612160	881.565	874.963	.550	.281409	.381919	52
51	880.179	873.216	.580	.254265	.354775	872.483	866.047	.536	.057995	.150372	51
50	870.970	864.176	.566	.030850	.123227	862.913	856.797	.510	3.855859	3.940458	50
49	861.267	854.797	.539	3.828711	3.913310	852.157	846.908	.437	3.674947	3.750617	49
48	850.362	844.770	.466	.647794	.723464	839.777	835.286	.374	.515604	.583137	48
47	837.807	832.986	.402	.488443	.555976	826.849	822.147	.392	.372677	.435440	47
46	824.698	819.662	.420	.345505	.408268	814.096	809.429	.389	.240874	.299067	46
45	811.769	806.767	.417	.213688	.271881	801.232	796.643	.382	.119264	.173368	45
44	798.724	793.803	.410	3.092060	3.146164	788.130	783.700	.369	3.006757	3.057068	44

41. $\pi=22.9667.$ **40.** $\pi=22.1206.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	**70.** π = 92.8725.					**71.** π = 98.5145.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	67.031	41.189	2.154	0.021969	0.042880	70.427	42.339	2.341	0.023182	0.045189	0
1	107.923	81.784	2.178	.346181	.368188	112.426	83.999	2.369	.348727	.371931	1
2	148.193	121.728	2.205	.547542	.570746	153.720	124.928	2.399	.551629	.576142	2
3	187.786	160.971	2.235	.700080	.724593	194.215	164.987	2.436	.705977	.731941	3
4	226.612	199.381	2.269	.827224	.853188	233.837	204.174	2.472	.835200	.862737	4
5	264.604	236.954	2.304	0.939579	0.967116	272.568	242.447	2.510	0.949934	0.979190	5
6	301.739	273.650	2.341	1.042974	1.072230	310.326	279.691	2.553	1.056082	1.087239	6
7	337.941	309.359	2.382	.141097	.172254	347.056	315.907	2.596	.157363	.190586	7
8	373.158	344.084	2.423	.236500	.269723	382.739	351.058	2.640	.256364	.291847	8
9	407.372	377.787	2.465	.331096	.366579	417.346	385.120	2.686	.355071	.393027	9
10	440.553	410.447	2.509	1.426454	1.464410	450.879	418.123	2.730	1.455096	1.495742	10
11	472.705	442.090	2.551	.523913	.564559	483.328	450.020	2.776	.557872	.601478	11
12	503.818	472.673	2.595	.624715	.668321	514.749	480.964	2.815	.664667	.711459	12
13	533.944	502.342	2.633	.729994	.776786	545.213	510.947	2.855	.776732	.827043	13
14	563.153	531.091	2.672	.840901	.891212	574.836	540.212	2.885	.895277	.949381	14
15	591.557	559.150	2.701	1.958570	2.012674	603.923	569.119	2.900	2.021447	2.079640	15
16	619.445	586.867	2.715	2.084085	.142278	632.753	597.874	2.907	.156634	.219397	16
17	647.089	614.437	2.721	.218790	.281553	661.986	627.583	2.867	.302013	.369546	17
18	675.116	642.922	2.683	.363822	.431355	689.978	653.860	3.010	.463094	.538764	18
19	701.956	668.117	2.820	.524658	.600328	714.297	676.219	3.173	.645183	.729782	19
20	725.272	689.555	2.976	2.706581	2.791180	735.932	697.132	3.233	2.848077	2.940454	20
21	746.018	709.607	3.034	.909369	3.001746	756.469	717.291	3.265	3.071958	3.172468	21
22	765.707	728.935	3.064	3.133184	.233694	776.109	736.413	3.308	.320234	.430125	22
23	784.539	747.270	3.106	.381422	.491313	794.986	755.046	3.328	.596822	.716902	23
24	802.640	765.136	3.125	.657988	.778068	814.483	775.406	3.256	.904507	4.035049	24
25	821.333	784.657	3.056	3.965663	4.096205	833.688	793.455	3.353	4.260054	4.407511	25
26	839.746	801.962	3.149	4.321204	.468661						26

38.

Policy Years. n.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
58	917.390	910.998	.533	5.522155	5.669612	58
57	909.116	903.221	.491	.166647	.297189	57
56	900.714	894.448	.522	4.859041	4.979121	56
55	892.579	886.418	.513	.582606	.692497	55
54	884.116	878.178	.495	4.334606	4.435116	54
53	875.267	869.492	.481	.111196	.203573	53
52	865.944	860.480	.455	3.909066	3.993665	52
51	855.465	850.846	.385	.728163	.803833	51
50	843.402	839.522	.323	.568832	.636365	50
49	830.807	826.721	.341	3.425923	3.488686	49
48	818.383	814.330	.338	.294145	.352338	48
47	805.849	801.874	.331	.172570	.226674	47
46	793.084	789.263	.318	.060106	.110417	46
45	779.957	776.343	.301	2.955971	.002763	45
44	766.418	763.009	.284	2.859371	2.902977	44

39.

Policy Years. n.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.
57	916.577	909.856	.560	5.495734	5.643191
56	908.196	901.979	.518	.140226	.270768
55	899.687	893.093	.550	4.832619	4.952699
54	891.447	884.960	.541	4.556183	4.666074
53	882.876	876.615	.522	.308182	.408692
52	873.914	867.817	.508	.084770	.177147
51	864.470	858.690	.482	3.882638	3.967237
50	853.857	848.931	.410	.701730	.777400
49	841.640	837.463	.348	3.542394	3.609927
48	828.882	824.497	.374	.399476	.462239
47	816.299	811.947	.363	.267686	.325879
46	803.605	799.331	.356	.146094	.200198
45	790.675	786.558	.343	.033609	.083920
44	777.379	773.472	.325	2.929447	2.976239

39. π = 21.3199.   **38.** π = 20.5624.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years n.	x = 72. π = 104.570. V. 6m.	V. 12m.	½m.d.	λ(Bf) 6m.	λB. 12m.	73. π = 111.075. V. 6m.	V. 12m.	½m.d.	λ(Bf) 6m.	λB. 12m.	Policy Years n.
0	74.036	43.502	2.545	0.024515	0.047719	77.879	44.682	2.766	0.025979	0.050492	0
1	117.156	86.240	2.576	.351524	.376037	122.086	88.415	2.806	.354626	.380590	1
2	159.441	128.071	2.614	.556152	.582116	165.343	131.196	2.846	.561148	.588685	2
3	200.815	168.990	2.652	.712491	.740028	207.624	172.978	2.887	.719674	.748930	3
4	241.258	208.955	2.692	.844001	.873257	248.845	213.637	2.934	.853740	.884897	4
5	280.685	247.846	2.737	0.961393	0.992550	288.944	253.175	2.981	0.974085	1.007308	5
6	319.040	285.663	2.781	1.070602	1.103825	327.900	291.549	3.029	1.086682	.122165	6
7	356.300	322.368	2.828	.175381	.210864	365.679	328.735	3.079	.195360	.233316	7
8	392.437	357.936	2.875	.278392	.316348	402.287	364.764	3.127	.302827	.343473	8
9	427.452	392.398	2.921	.381666	.422312	437.713	399.586	3.177	.411211	.454817	9
10	461.337	425.705	2.969	1.486911	1.530517	472.014	433.367	3.221	1.522247	1.569039	10
11	494.146	458.017	3.011	.595585	.642377	505.271	466.100	3.264	.637511	.687822	11
12	525.956	489.326	3.053	.709074	.759385	537.611	498.048	3.297	.758458	.812562	12
13	556.890	519.884	3.084	.828692	.882796	569.365	529.607	3.313	.886412	.944605	13
14	587.263	550.070	3.099	.955661	2.013854	600.840	560.998	3.320	2.022905	2.085668	14
15	617.368	580.096	3.106	2.091434	2.154197	632.752	593.431	3.277	2.169222	2.236755	15
16	647.892	611.118	3.064	.237235	.304768	663.312	622.118	3.433	.330963	.406633	16
17	677.123	638.557	3.214	.398613	.474283	689.861	646.528	3.611	.513497	.598096	17
18	702.516	661.905	3.384	.580902	.665501	713.481	669.359	3.677	.716678	.809055	18
19	725.108	683.742	3.447	.783926	.876303	735.900	691.366	3.711	.940734	3.041244	19
20	746.552	704.792	3.480	3.007885	3.108395	757.341	712.242	3.758	3.189113	3.299004	20
21	767.061	724.760	3.525	.256208	.366099	777.951	732.584	3.781	.465757	.585837	21
22	786.774	744.217	3.546	.532821	.652901	799.235	754.811	3.702	.773472	.904014	22
23	807.132	765.477	3.471	.840520	.971062	820.200	774.514	3.807	4.129033	4.276490	23
24	827.185	784.323	3.572	4.196073	4.343530						24

37. (left) / 36. (right)

Policy Years n.	37. V. 6m.	V. 12m.	½m.d.	λ(Bf) 6m.	λB. 12m.	36. V. 6m.	V. 12m.	½m.d.	λ(Bf) 6m.	λB. 12m.	Policy Years n.
						918.890	913.103	.482	5.574024	5.721481	60
59	918.161	912.080	.507	5.548246	5.695703	910.810	905.510	.442	5.218516	5.349058	59
58	909.986	904.397	.466	.192738	.323280	902.607	896.944	.472	4.910910	.030990	58
57	901.687	895.730	.496	4.885132	.005212	894.666	889.105	.463	.634476	4.744367	57
56	893.651	887.799	.488	.608697	4.718588	886.402	881.060	.445	.386478	.486988	56
55	885.291	879.659	.469	.360698	.461208	877.763	872.579	.432	.163071	.255448	55
54	876.550	871.078	.456	4.137290	4.229667	868.659	863.780	.407	3.960945	4.045544	54
53	867.339	862.176	.430	3.935162	.019761	858.429	854.373	.338	.780050	3.855720	53
52	856.988	852.658	.361	.754263	3.829933	846.651	843.318	.278	.620731	.688264	52
51	845.073	841.473	.300	.594939	.662472	834.354	830.819	.295	.477838	.540601	51
50	832.629	828.827	.317	.452038	.514801	822.224	818.722	.292	.346082	.404275	50
49	820.357	816.587	.314	3.320271	3.378464	809.986	806.560	.286	3.224535	3.278639	49
48	807.975	804.281	.308	.198711	.252815	797.523	794.247	.273	.112109	.162420	48
47	795.365	791.824	.295	.086267	.136578	784.707	781.633	.256	.008023	.054815	47
46	782.397	779.061	.280	2.982156	.028948	771.488	768.615	.239	2.911484	2.955090	46
45	769.023	765.889	.261	.885589	2.929195	757.836	755.195	.220	.821765	.862411	45
44	755.211	752.312	.242	2.805832	2.836478	743.728	741.310	.201	2.738237	2.776193	44

| **37.** π = 19.8452. | **36.** π = 19.1663. |

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	74. π = 118.069. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	75. π = 125.579. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	81.924	45.779	3.012	0.027616	0.053580	86.255	46.930	3.277	0.029403	0.056940	0
1	127.204	90.560	3.054	.358048	.385585	132.637	92.765	3.323	.361802	.391058	1
2	171.463	134.297	3.097	.566649	.595905	177.855	137.367	3.374	.572730	.603887	2
3	214.612	176.858	3.146	.727620	.758777	221.843	180.740	3.425	.736408	.769631	3
4	256.586	218.244	3.195	.864521	.897744	264.577	222.835	3.479	.876447	.911930	4
5	297.363	258.413	3.246	0.988135	1.023618	306.021	263.628	3.533	1.003701	1.041657	5
6	336.910	297.339	3.298	1.104508	.142464	346.180	303.152	3.586	.124270	.164916	6
7	375.231	335.053	3.348	.217518	.258164	385.041	341.351	3.641	.242130	.285736	7
8	412.312	371.503	3.401	.329973	.373579	422.669	378.409	3.688	.360118	.406910	8
9	448.218	406.864	3.446	.444027	.490819	459.152	414.316	3.736	.480513	.530824	9
10	483.031	441.128	3.492	1.561535	1.611846	494.629	449.363	3.772	1.605247	1.659351	10
11	516.884	474.571	3.526	.684149	.738253	529.463	483.983	3.790	.735978	.794171	11
12	550.123	507.606	3.543	.813330	.871523	563.990	518.419	3.798	.874485	.937248	12
13	583.070	540.466	3.550	.950716	2.013479	598.998	553.998	3.750	2.022241	2.089774	13
14	616.475	574.415	3.505	2.097673	.165206	632.522	585.467	3.921	.184988	.260658	14
15	648.464	604.444	3.668	2.259861	2.335531	661.645	612.244	4.117	2.368201	2.452800	15
16	676.254	629.995	3.855	.442697	.527296	687.557	637.290	4.189	.571816	.664193	16
17	700.979	653.894	3.924	.646072	.738449	712.150	661.431	4.227	.796138	.896648	17
18	724.447	676.931	3.960	.870247	.970757	735.671	684.332	4.278	3.044672	3.154563	18
19	746.892	698.783	4.009	3.118695	3.228586	758.279	706.647	4.303	.321402	.441482	19
20	768.464	720.076	4.032	3.395377	3.515457	781.627	731.029	4.216	3.629161	3.759703	20
21	790.743	743.342	3.950	.703111	.833653	804.626	752.644	4.332	.984743	4.132200	21
22	812.690	763.968	4.060	4.058682	4.206139						

35.

n	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.
61	919.579	914.071	.459	5.599505	5.746962
60	911.590	906.563	.419	.243997	.374539
59	903.478	898.092	.449	4.936392	5.056472
58	895.625	890.341	.440	.659958	4.769849
57	887.454	882.385	.422	.411961	.512471
56	878.911	873.999	.409	.188555	.280932
55	869.909	865.298	.384	3.986432	.071031
54	859.792	855.996	.316	3.805540	3.881210
53	848.146	845.064	.257	.646226	.713759
52	835.986	832.705	.273	.503341	.566104
51	823.990	820.742	.271	.371594	.429787
50	811.890	808.715	.265	.250061	.304165
49	799.565	796.540	.252	3.137652	3.187963
48	786.891	784.066	.235	.033587	.080379
47	773.820	771.193	.219	2.937076	2.980682
46	760.320	757.923	.200	.847391	.888037
45	746.370	744.193	.181	.763905	.801861
44	731.972	730.022	.162	2.686005	2.721488

35.   π = 18.5241.

34.

V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n
920.234	914.990	.437	5.624707	5.772164	62
912.330	907.562	.397	.269199	.399741	61
904.305	899.182	.427	4.961593	.081673	60
896.535	891.513	.419	4.685161	4.795052	59
888.452	883.643	.401	.437164	.537674	58
880.000	875.346	.388	.213759	.306136	57
871.094	866.738	.363	.011639	.096238	56
861.085	857.536	.296	3.830750	3.906420	55
849.564	846.720	.237	3.671441	3.738974	54
837.533	834.493	.253	.528561	.591324	53
825.666	822.658	.251	.396824	.455017	52
813.695	810.760	.245	.275303	.329407	51
801.503	798.716	.232	.162910	.213221	50
788.965	786.375	.216	3.058866	3.105658	49
776.032	773.639	.199	2.962380	.005986	48
762.677	760.511	.180	.872726	2.913372	47
748.876	746.928	.162	.789280	.827236	46
734.632	732.908	.144	.711426	.746909	45
719.945	718.441	.125	2.638638	2.671861	44

34.   π = 17.9149.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000,

4 PER CENT.

Policy Years. $n.$	$x = 76.$ $\pi = 133.656.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	77. $\pi = 142.352.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. $n.$
0	90.874	48.092	3.565	0.031370	0.060626	95.758	49.163	3.883	0.033566	0.064723	0
1	138.320	94.891	3.619	.365966	.397123	144.242	96.970	3.939	.370572	.403795	1
2	184.473	140.399	3.673	.579461	.612684	191.347	143.371	3.998	.586900	.622383	2
3	229.311	184.568	3.729	.746131	.781614	237.029	188.335	4.058	.756894	.794850	3
4	272.797	227.369	3.786	.889659	.927615	281.293	231.900	4.116	.904298	.944944	4
5	314.932	268.839	3.841	1.020957	1.061603	324.128	274.004	4.177	1.040118	1.083724	5
6	355.707	308.919	3.899	.146221	.189827	365.604	314.851	4.229	.170591	.217383	6
7	395.188	347.801	3.949	.269462	.316254	405.817	354.431	4.282	.299854	.350165	7
8	433.467	385.477	3.999	.393642	.443953	444.922	393.061	4.322	.430952	.485056	8
9	470.691	422.250	4.037	.521119	.575223	483.316	431.220	4.341	.566257	.624450	9
10	507.240	458.574	4.055	1.653836	1.712029	521.375	469.178	4.350	1.708034	1.770797	10
11	543.468	494.706	4.064	.793770	.856533	559.962	508.394	4.297	.858101	.925634	11
12	580.199	532.036	4.014	.942538	2.010071	596.914	543.081	4.486	2.022455	2.098125	12
13	615.374	565.055	4.193	2.105990	.181660	629.015	572.597	4.702	.206741	.291340	13
14	645.931	593.151	4.398	.289675	.374274	657.576	600.203	4.781	.411044	.503421	14
15	673.118	619.430	4.474	2.493593	2.585970	684.684	626.813	4.823	2.635785	2.736295	15
16	698.923	644.760	4.514	.718100	.818610	710.610	652.055	4.880	.884565	.994456	16
17	723.602	668.788	4.568	.966743	3.076634	735.529	676.651	4.906	3.161431	3.281511	17
18	747.323	692.202	4.593	3.243532	.363612	761.265	703.527	4.812	.469260	.599802	18
19	771.822	717.785	4.503	.551322	.681864	786.615	727.352	4.939	.824875	.972332	19
20	795.952	740.464	4.624	3.906919	4.054376						20

33.

$n.$	V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	**32.** V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	$n.$
64						921.441	916.686	.396	5.674326	5.821783	64
63	920.854	915.861	.416	5.649642	5.797099	913.694	909.406	.357	.318819	.449361	63
62	913.030	908.508	.377	.294135	.424677	905.830	901.193	.386	.011214	.131294	62
61	905.088	900.214	.406	4.986529	.106609	898.216	893.677	.378	4.734781	4.844672	61
60	897.398	892.624	.398	.710097	4.819988	890.293	885.964	.361	.486786	.587296	60
59	889.397	884.834	.380	4.462101	4.562611	882.010	877.833	.348	4.263384	4.355761	59
58	881.031	876.622	.367	.238698	.331075	873.283	869.397	.324	.061267	.145866	58
57	872.218	868.103	.343	.036579	.121178	863.473	860.378	.258	3.880384	3.956054	57
56	862.311	858.994	.276	3.855693	3.931363	852.181	849.778	.200	.721083	.788616	56
55	850.908	848.290	.218	.696388	.763921	840.391	837.795	.216	.578216	.640979	55
54	839.000	836.188	.234	3.553515	3.616278	828.761	826.196	.214	3.446495	3.504688	54
53	827.255	824.474	.232	.421786	.479979	817.028	814.536	.208	.324996	.379100	53
52	815.406	812.698	.226	.300276	.354380	805.079	802.731	.196	.212632	.262943	52
51	803.339	800.777	.214	.187898	.238209	792.791	790.637	.180	.108624	.155416	51
50	790.929	788.563	.197	.083873	.130665	780.117	778.155	.163	.012186	.055792	50
49	778.130	775.957	.181	2.987412	3.031018	767.028	765.289	.145	2.922589	2.963235	49
48	764.910	762.964	.162	.897788	2.938434	753.502	751.977	.127	.839212	.877168	48
47	751.250	749.519	.144	.814377	.852333	739.543	738.237	.109	.761444	.796927	47
46	737.153	735.643	.126	.736568	.772051	725.149	724.058	.091	.688756	.721979	46
45	722.616	721.324	.108	.663831	.697054	710.333	709.450	.074	.620655	.651812	45
44	707.654	706.571	.090	2.595674	2.626831	695.103	694.427	.056	2.556708	2.585964	44

33. $\pi = 17.3376.$ **32.** $\pi = 16.7902.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

n.	**78.** V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	**79.** V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n.
	π = 151.701.					**π = 161.769.**					
0	100.990	50.279	4.226	0.035976	0.069199	106.576	51.383	4.599	0.038642	0.074125	0
1	150.529	99.078	4.288	.375648	.411131	157.164	101.175	4.666	.381265	.419221	1
2	198.573	146.367	4.351	.595120	.633076	206.181	149.418	4.730	.604219	.644865	2
3	245.127	192.185	4.412	.768806	.809452	253.615	196.044	4.798	.782023	.825629	3
4	290.176	236.467	4.476	.920540	.964146	299.545	241.277	4.856	.938556	.985348	4
5	333.797	279.425	4.531	1.061377	1.108169	344.077	285.107	4.914	1.085004	1.135315	5
6	376.088	321.051	4.586	.197679	.247990	387.381	327.886	4.958	.227823	.281927	6
7	417.216	361.679	4.628	.333673	.387777	429.899	370.143	4.980	.371259	.429452	7
8	457.596	401.812	4.649	.472420	.530613	472.044	412.176	4.989	.518708	.581471	8
9	497.622	441.732	4.657	.616620	.679383	514.774	455.604	4.931	.672714	.740247	9
10	538.205	482.976	4.602	1.768380	1.835913	555.695	494.016	5.140	1.839770	1.915440	10
11	577.066	519.456	4.801	.933901	2.009571	591.243	526.701	5.379	2.025850	2.110449	11
12	610.828	550.498	5.028	2.118963	.203562	622.870	557.271	5.467	.231294	.323671	12
13	640.865	579.531	5.111	.323761	.416138	652.889	586.738	5.513	.456730	.557240	13
14	669.374	607.517	5.155	.548804	.649314	681.599	614.691	5.576	.705916	.815807	14
15	696.641	634.064	5.215	2.797761	2.907652	709.195	641.929	5.605	2.983005	3.103085	15
16	722.849	659.933	5.243	3.074724	3.194804	737.694	671.691	5.500	3.290950	.421492	16
17	749.916	688.198	5.143	.382603	.513145	765.767	698.074	5.641	.646620	.794077	17
18	776.577	713.255	5.277	.738242	.885699						18

30.

n.	**31.** V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	**30.** V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n.
66						922.527	918.211	.360	5.722991	5.870448	66
65	921.998	917.469	.377	5.698772	5.846229	914.922	911.064	.322	.367484	.498026	65
64	914.325	910.257	.339	5.343264	5.473806	907.202	903.002	.350	5.059879	5.179959	64
63	906.534	902.121	.368	.035659	.155739	899.727	895.623	.342	4.783447	4.893338	63
62	898.991	894.676	.360	4.759227	4.869118	891.949	888.051	.325	.535453	.635963	62
61	891.143	887.035	.342	.511233	.611743	883.817	880.068	.312	.312053	.404430	61
60	882.937	878.980	.330	.287832	.380209	875.249	871.787	.288	.109939	.194538	60
59	874.292	870.624	.306	4.085716	4.170315	865.620	862.933	.224	3.929062	4.004732	59
58	864.575	861.689	.241	3.904836	3.980506	854.535	852.528	.167	.769768	3.837301	58
57	853.389	851.189	.183	.745539	.813072	842.960	840.763	.183	.626912	.689675	57
56	841.709	839.318	.199	.602677	.665440	831.543	829.377	.181	.495205	.553398	56
55	830.189	827.829	.197	.470964	.529157	820.025	817.930	.175	.373725	.427829	55
54	818.566	816.278	.191	3.349475	3.403579	808.294	806.341	.163	3.261386	3.311697	54
53	806.729	804.584	.179	.237124	.287435	796.231	794.468	.147	.157411	.204203	53
52	794.557	792.603	.163	.133133	.179925	783.789	782.215	.131	.061013	.104619	52
51	782.001	780.239	.147	.036715	.080321	770.939	769.584	.113	2.971467	.012113	51
50	769.035	767.493	.128	2.947144	2.987790	757.661	756.516	.095	.888151	2.926107	50
49	755.636	754.306	.111	2.863799	2.901755	743.957	743.027	.077	2.810456	2.845939	49
48	741.808	740.695	.093	.786069	.821552	729.827	729.108	.060	.737856	.771079	48
47	727.550	726.650	.075	.713426	.746649	715.283	714.767	.043	.669860	.701017	47
46	712.874	712.179	.058	.645379	.676536	700.330	700.019	.026	.606033	.635289	46
45	697.786	697.297	.041	.581495	.610751	684.994	684.863	.011	.545968	.573505	45
44	682.310	682.004	.026	2.521362	2.548899	669.304	669.346	.004	2.489277	2.515241	44

31. π = 16.2712.	**30.** π = 15.7791.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years n.	$x=80.$ $\pi=172.614.$ V. 6m.	V. 12m.	½ m.d.	$\lambda(\mathrm{B}f)$. 6m.	λB. 12m.	81. $\pi=184.307.$ V. 6m.	V. 12m.	½ m.d.	$\lambda(\mathrm{B}f)$. 6m.	λB. 12m.	Policy Years n.
0	112.552	52.490	5.005	0.041593	0.079549	118.990	53.673	5.443	0.044845	0.085491	0
1	164.225	103.346	5.073	.387468	.428114	171.764	105.548	5.518	.394354	.437960	1
2	214.229	152.497	5.144	.614311	.657917	222.864	155.873	5.583	.625476	.672268	2
3	262.645	200.180	5.205	.796670	.843462	272.408	204.636	5.648	.812927	.863238	3
4	309.589	246.384	5.267	.958568	1.008879	320.587	252.230	5.696	.980820	1.034924	4
5	355.239	291.480	5.313	1.111288	1.165392	367.890	299.244	5.721	1.140469	1.198662	5
6	400.060	336.026	5.336	.261311	.319504	414.780	346.009	5.731	.298706	.361469	6
7	444.488	380.336	5.346	.413224	.475987	462.320	394.324	5.666	.459969	.527502	7
8	489.533	426.116	5.285	.570269	.637802	507.846	437.060	5.899	.631901	.707571	8
9	532.670	466.609	5.505	.739384	.815054	547.395	473.424	6.164	.821168	.905767	9
10	570.143	501.064	5.757	1.926817	2.011416	582.584	507.436	6.262	2.028623	2.121000	10
11	603.484	533.290	5.850	2.133118	.225495	615.981	540.220	6.313	.255275	.355785	11
12	635.129	564.354	5.898	.359073	.459583	647.923	571.319	6.384	.505169	.615060	12
13	665.394	593.820	5.964	.608561	.718452	678.625	601.623	6.417	.782647	.902727	13
14	694.484	622.534	5.996	.885817	3.005897	710.332	634.735	6.300	3.090792	3.221334	14
15	724.528	653.908	5.885	3.193848	3.324390	741.565	664.088	6.456	3.446559	3.594016	15
16	754.121	681.720	6.033	.549559	.697016						

29. — 28.

n	V. 6m.	V. 12m.	½ m.d.	$\lambda(\mathrm{B}f)$. 6m.	λB. 12m.	V. 6m.	V. 12m.	½ m.d.	$\lambda(\mathrm{B}f)$. 6m.	λB. 12m.	n
						923.504	919.583	.327	5.770798	5.918255	68
67	923.028	918.915	.343	5.746996	5.894453	916.027	912.556	.289	.415291	.545833	67
66	915.488	911.829	.305	.391489	.522031	908.436	904.629	.317	.107686	.227766	66
65	907.835	903.836	.333	.083884	.203964	901.087	897.375	.309	4.831255	4.941146	65
64	900.423	896.521	.325	4.807453	4.917344	893.439	889.929	.293	4.583262	4.683772	64
63	892.713	889.014	.308	.559460	.659970	885.445	882.081	.280	.359864	.452241	63
62	884.651	881.100	.296	.336060	.428437	877.020	873.939	.257	.157753	.242352	62
61	876.157	872.890	.272	.133948	.218547	867.552	865.233	.193	3.976880	.052550	61
60	866.610	864.112	.208	3.953072	.028742	856.654	855.002	.138	.817593	3.885126	60
59	855.621	853.796	.152	3.793783	3.861316	845.272	843.436	.153	3.674746	3.737509	59
58	844.145	842.133	.168	.650931	.713694	834.047	832.240	.151	.543052	.601245	58
57	832.826	830.845	.165	.519231	.577424	822.723	820.985	.145	.421588	.475692	57
56	821.408	819.496	.159	.397759	.451863	811.188	809.591	.133	.309272	.359583	56
55	809.779	808.008	.148	.285432	.335743	799.328	797.917	.118	.205325	.252117	55
54	797.819	796.237	.132	3.181471	3.228263	787.095	785.870	.102	3.108962	3.152568	54
53	785.484	784.089	.116	.085091	.128697	774.461	773.451	.084	.019460	.060106	53
52	772.745	771.567	.098	2.995568	.036214	761.406	760.602	.067	2.936199	2.974155	52
51	759.580	758.611	.081	.912280	2.950236	747.931	747.340	.049	.858569	.894052	51
50	745.995	745.238	.063	.834619	.870102	734.038	733.654	.032	.786046	.819269	50
49	731.986	731.439	.046	2.762059	2.795282	719.738	719.553	.015	2.718140	2.749297	49
48	717.566	717.221	.029	.694109	.725266	705.037	705.053	.001	.654419	.683675	48
47	702.744	702.600	.012	.630337	.659593	689.958	690.152	.016	.594476	.622013	47
46	687.539	687.575	.003	.570335	.597872	674.531	674.895	.030	.537926	.563890	46
45	671.983	672.191	.017	.513717	.539681	658.764	659.298	.044	.484453	.508966	45
44	656.086	656.464	.032	2.460167	2.484680	642.687	643.362	.056	2.433756	2.456960	44

29. $\pi=15.3125.$ — **28.** $\pi=14.8689.$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	82. $\pi = 196.942$ V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	83. $\pi = 210.594$ V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	125.880	54.817	5.922	0.048478	0.092084	133.429	56.263	6.431	0.052451	0.099243	0
1	179.877	107.996	5.990	.401959	.448751	188.818	110.780	6.503	.410393	.460704	1
2	232.232	159.525	6.059	.637870	.688181	242.683	163.991	6.558	.651621	.705725	2
3	283.142	209.818	6.110	.830995	.885099	295.568	216.552	6.585	.851002	.909195	3
4	333.129	259.498	6.136	1.005502	1.063695	347.991	268.836	6.596	1.033065	1.095828	4
5	382.678	308.916	6.147	1.173060	1.235823	401.142	322.853	6.524	1.209337	1.276870	5
6	432.915	359.972	6.079	.340355	.407888	452.039	370.631	6.784	.390937	.466607	6
7	481.023	405.131	6.324	.516239	.591909	496.256	411.287	7.081	.586356	.670955	7
8	522.815	443.558	6.605	.708048	.792647	535.596	449.312	7.190	.797620	.889997	8
9	560.000	479.499	6.708	.917087	2.009464	572.936	485.965	7.248	2.026552	2.127062	9
10	595.291	514.142	6.762	2.144692	2.245202	608.646	520.734	7.326	2.277765	2.387656	10
11	629.045	547.005	6.837	.395138	.505029	642.971	554.614	7.363	.555967	.676047	11
12	661.487	579.028	6.872	.672919	.792999	678.421	591.633	7.232	.864483	.995025	12
13	694.994	614.018	6.748	.981220	3.111762	713.338	624.450	7.407	3.220429	3.367886	13
14	727.998	645.036	6.914	3.337062	.484519						14

26.

Policy Years. n.	27. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	26. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
						924.385	920.820	.297	5.817832	5.965289	70
69	923.956	920.218	.312	5.794407	5.941864	917.023	913.901	.260	5.462325	5.592867	69
68	916.538	913.246	.274	.438899	.569441	909.549	906.096	.288	.154720	.274800	68
67	909.007	905.382	.302	.131295	.251375	902.313	898.953	.280	4.878290	4.988181	67
66	901.715	898.184	.294	4.854864	4.964755	894.783	891.623	.263	.630298	.730808	66
65	894.129	890.798	.278	.606872	.707382	886.911	883.895	.251	.406901	.499278	65
64	886.196	883.012	.265	4.383474	4.475851	878.617	875.878	.228	4.204793	4.289392	64
63	877.839	874.933	.242	.181365	.265964	869.294	867.306	.166	.023923	.099593	63
62	868.446	866.297	.179	.000493	.076163	858.563	857.233	.111	3.864643	3.932176	62
61	857.633	856.147	.124	3.841210	3.908743	847.357	845.844	.126	.721803	.784566	61
60	846.342	844.671	.139	.698366	.761129	836.304	834.821	.124	.590121	.648314	60
59	835.205	833.564	.137	3.566678	3.624871	825.154	823.739	.118	3.468672	3.522776	59
58	823.970	822.398	.131	.445223	.499327	813.798	812.520	.106	.356375	.406686	58
57	812.527	811.094	.119	.332916	.383227	802.119	801.026	.091	.252453	.299245	57
56	800.760	799.512	.104	.228982	.275774	790.075	789.164	.076	.156122	.199728	56
55	788.623	787.560	.089	.132636	.176242	777.635	776.936	.058	.066659	.107305	55
54	776.089	775.239	.071	3.043154	3.083800	764.780	764.285	.041	2.983445	3.021401	54
53	763.137	762.491	.054	2.959917	2.997873	751.514	751.227	.024	.905872	2.941355	53
52	749.769	749.334	.036	.882316	.917799	737.834	737.751	.007	.833417	.866640	52
51	735.985	735.756	.019	.809828	.843051	723.753	723.868	.010	.765591	.796748	51
50	721.798	721.767	.003	.741964	.773121	709.279	709.590	.026	.701964	.731220	50
49	707.213	707.381	.014	2.678291	2.707547	694.431	694.918	.041	2.642128	2.669665	49
48	692.253	692.597	.029	.618404	.645941	679.242	679.896	.055	.585701	.611665	48
47	676.947	677.460	.043	.561916	.587880	663.719	664.539	.068	.532368	.556881	47
46	661.305	661.986	.057	.508516	.533029	647.888	648.849	.080	.481830	.505034	46
45	645.355	646.177	.068	.457901	.481105	631.787	632.878	.091	.433790	.455797	45
44	629.132	630.085	.079	2.409775	2.431782	615.439	616.648	.101	2.388007	2.408918	44

27. $\pi = 14.4479$	**26.** $\pi = 14.0485$

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 84$. $\pi = 225.442$. V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	$\lambda(Bf)$. 6m.	λB. 12m.	85. $\pi = 241.622$. V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	$\lambda(Bf)$. 6m.	λB. 12m.	Policy Years. n.
0	141.605	57.768	6.986	0.056912	0.107223	150.731	59.840	7.574	0.061816	0.115920	0
1	198.680	114.150	7.044	.419758	.473862	210.206	118.949	7.605	.430060	.488253	1
2	254.719	169.845	7.073	.666832	.725025	269.158	177.746	7.618	.683828	.746591	2
3	310.266	225.246	7.085	.873363	.936126	328.931	238.493	7.537	.898194	.965727	3
4	366.586	282.483	7.009	1.063734	1.131267	386.169	292.224	7.829	1.102046	1.177716	4
5	420.517	333.110	7.284	1.253934	1.329604	435.895	337.944	8.163	1.310810	1.395409	5
6	467.371	376.189	7.599	.454640	.539239	480.136	380.706	8.286	.530046	.622423	6
7	509.056	416.481	7.715	.669110	.761487	522.127	421.925	8.350	.763647	.864157	7
8	548.621	455.319	7.775	.899935	2.000445	562.286	461.026	8.438	2.017529	2.127420	8
9	586.461	492.161	7.858	2.152236	.262127	600.888	499.127	8.480	.297183	.417263	9
10	622.832	528.061	7.898	2.431031	2.551111	640.753	540.758	8.333	2.606442	2.736984	10
11	660.395	567.287	7.759	.739852	.870394	680.022	577.663	8.530	.962744	3.110201	11
12	697.395	602.061	7.944	3.095944	3.243401						

	25.					**24.**					
						925.180	921.937	.270	5.864170	6.011627	72
71	924.793	921.393	.283	5.841083	5.988540	917.922	915.115	.234	.508663	5.639205	71
70	917.484	914.524	.247	.485576	.616118	910.553	907.420	.261	.201059	.321139	70
69	910.064	906.775	.274	5.177972	5.298052	903.418	900.378	.253	4.924629	5.034520	69
68	902.879	899.684	.266	4.901542	.011433	895.996	893.151	.237	.676637	4.777147	68
67	895.405	892.406	.250	.653550	4.754060	888.234	885.532	.225	.453242	.545619	67
66	887.590	884.735	.238	.430154	.522531	880.056	877.628	.202	.251136	.335735	66
65	879.355	876.775	.215	.228047	.312646	870.866	869.177	.141	.070270	.145940	65
64	870.100	868.266	.153	4.047179	4.122849	860.285	859.246	.087	3.910994	3.978527	64
63	859.446	858.265	.098	3.887901	3.955434	849.238	848.017	.102	.768162	.830925	63
62	848.322	846.959	.114	.745066	.807829	838.341	837.150	.099	.636489	.694682	62
61	837.349	836.015	.111	.613388	.671581	827.347	826.224	.094	.515054	.569158	61
60	826.279	825.014	.105	.491947	.546051	816.151	815.163	.082	.402774	.453085	60
59	815.005	813.876	.094	3.379658	3.429969	804.638	803.831	.067	3.298874	3.345666	59
58	803.412	802.465	.079	.275748	.322540	792.762	792.136	.052	.202571	.246177	58
57	791.453	790.689	.064	.179431	.223037	780.498	780.081	.035	.113142	.153788	57
56	779.104	778.549	.046	.089986	.130632	767.825	767.607	.018	.029970	.067926	56
55	766.342	765.989	.029	.006793	.044749	754.745	754.734	.001	2.952448	2.987931	55
54	753.171	753.026	.012	2.929246	2.964729	741.259	741.449	.016	2.880053	2.913276	54
53	739.591	739.648	.005	.856822	.890045	727.377	727.761	.032	.812297	.843454	53
52	725.612	725.865	.021	.789033	.820190	713.105	713.684	.048	.748752	.778008	52
51	711.242	711.690	.037	.725447	.754703	698.468	699.219	.063	.689012	.716549	51
50	696.503	697.125	.052	.665661	.693198	683.493	684.409	.076	.632693	.658657	50
49	681.422	682.211	.066	2.609289	2.635253	668.187	669.268	.090	2.579484	2.603997	49
48	666.011	666.965	.079	.556021	.580534	652.581	653.799	.102	.529085	.552289	48
47	650.295	651.388	.091	.505554	.528758	636.707	638.054	.112	.481202	.503209	47
46	634.311	635.533	.102	.457595	.479602	620.588	622.052	.122	.435594	.456505	46
45	618.080	619.420	.112	.411902	.432813	604.256	605.816	.130	.392028	.411946	45
44	601.634	603.071	.120	2.368242	2.388160	587.734	589.388	.138	2.350298	2.369299	44

| | **25.** | $\pi = 13.6687$. | | **24.** | $\pi = 13.3082$. |

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	86.		π = 259.448.			87.		π = 279.436.			Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	161.160	62.872	8.191	0.067214	0.125407	173.086	66.735	8.863	0.073392	0.136155	0
1	223.866	125.411	8.205	.441636	.504399	240.927	135.683	8.770	.454427	.521960	1
2	287.441	190.024	8.118	.702683	.770216	305.893	196.668	9.102	.727812	.803482	2
3	348.324	247.175	8.429	.930001	1.005671	362.333	248.561	9.481	.972065	1.056664	3
4	401.214	295.805	8.784	1.151718	.236317	412.546	297.096	9.621	1.210687	.303064	4
5	448.271	341.289	8.915	1.378303	1.470680	460.206	343.880	9.694	1.455162	1.555672	5
6	492.934	385.132	8.984	.616135	.716645	505.788	388.260	9.794	.715063	.824954	6
7	535.651	426.721	9.077	.872380	.982271	549.600	431.504	9.841	.997939	2.118019	7
8	576.708	467.247	9.122	2.153307	2.273387	594.848	478.756	9.674	2.308839	.439381	8
9	619.111	511.528	8.965	.463217	.593759	639.418	520.644	9.898	.665921	.813378	9
10	660.879	550.782	9.175	2.819828	2.967285						

Policy Years. n.	23.					22.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
74						925.897	922.944	.246	5.909879	6.057336	74
73	925.548	922.453	.258	5.887099	6.034556	918.733	916.211	.210	.554372	5.684914	73
72	918.338	915.677	.222	.531592	5.662134	911.460	908.615	.237	.246768	.366848	72
71	911.018	908.033	.249	.223988	.344068	904.417	901.664	.229	4.970339	.080230	71
70	903.930	901.037	.241	4.947558	.057449	897.089	894.530	.213	.722348	4.822858	70
69	896.557	893.858	.225	4.699567	4.800077	889.428	887.009	.202	4.498954	4.591331	69
68	888.846	886.289	.213	.476173	.568550	881.357	879.207	.179	.296850	.381449	68
67	880.724	878.438	.191	.274068	.358667	872.284	870.866	.118	.115987	.191657	67
66	871.593	870.043	.129	.093203	.168873	861.841	861.063	.065	3.956716	.024249	66
65	861.083	860.177	.075	3.933930	.001463	850.936	849.979	.080	.813890	3.876653	65
64	850.108	849.023	.090	3.791101	3.853864	840.179	839.252	.077	3.682227	3.740420	64
63	839.283	838.227	.088	.659433	.717626	829.328	828.467	.072	.560803	.614907	63
62	828.364	827.374	.083	.538004	.592108	818.277	817.549	.061	.448538	.498849	62
61	817.241	816.387	.071	.425732	.476043	806.911	806.364	.046	.344658	.391450	61
60	805.804	805.130	.056	.321842	.368634	795.190	794.819	.031	.248379	.291985	60
59	794.007	793.512	.041	3.225551	3.269157	783.084	782.920	.014	3.158981	3.199627	59
58	781.824	781.536	.024	.136138	.176784	770.574	770.608	.003	.075846	.113802	58
57	769.235	769.146	.007	.052985	.090941	757.663	757.900	.020	2.998369	.033852	57
56	756.241	756.357	.010	2.975486	.010969	744.350	744.786	.036	.926027	2.959250	56
55	742.844	743.160	.026	.903118	2.936341	730.648	731.275	.052	.858334	.889491	55
54	729.054	729.562	.042	2.835395	2.866552	716.562	717.381	.068	2.794862	2.824118	54
53	714.877	715.579	.058	.771887	.801143	702.112	703.102	.083	.735205	.762742	53
52	700.337	701.210	.073	.712190	.739727	687.331	688.483	.096	.678982	.704946	52
51	685.460	686.497	.086	.655921	.681885	672.223	673.538	.110	.625883	.650396	51
50	670.257	671.457	.100	.602768	.627281	656.817	658.268	.121	.575607	.598811	50
49	654.753	656.091	.112	2.552433	2.575637	641.148	642.726	.131	2.527863	2.549870	49
48	638.984	640.449	.122	.504621	.526628	625.238	626.931	.141	.482409	.503320	48
47	622.972	624.553	.132	.459093	.480004	609.117	610.905	.149	.439015	.458933	47
46	606.748	608.425	.140	.415615	.435533	592.808	594.688	.157	.397476	.416477	46
45	590.335	592.105	.147	.373984	.392985	576.331	578.288	.163	.357599	.375780	45
44	573.754	575.600	.154	2.334006	2.352187	559.752	561.734	.165	2.319204	2.336626	44

23. π = 12.9656.   **22.** π = 12.6399.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	88. π = 302.168. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	89. π = 329.342. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
0	188.023	73.878	9.51	0.080005	0.147538	199.951	70.559	10.78	0.091697	0.167367	0
1	257.635	139.224	9.87	.472731	.548401	265.249	130.597	11.22	.497892	.582491	1
2	318.110	194.827	10.27	.761752	.846351	323.345	186.752	11.38	.800873	.893250	2
3	371.914	246.833	10.42	1.021673	1.114050	378.488	240.881	11.47	1.076513	1.177023	3
4	422.982	296.963	10.50	.277234	.377744	431.225	292.227	11.58	.352468	.462359	4
5	471.823	344.516	10.61	1.543045	1.652936	481.914	342.260	11.64	1.643617	1.763697	5
6	518.769	390.853	10.66	.829022	.949102	534.266	396.930	11.45	.958640	2.089182	6
7	567.252	441.483	10.48	2.141481	2.272023	585.833	445.393	11.70	2.317667	.465124	7
8	615.009	486.367	10.72	.499301	.646758						8

Policy Years. n.	21. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	20. V. 6m.	V. 12m.	½m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
						926.546	923.855	.224	5.955022	6.102479	76
75	926.229	923.411	.235	5.932518	6.079975	919.466	917.201	.189	.599515	5.730057	75
74	919.109	916.718	.199	5.577011	5.707553	912.279	909.695	.215	5.291911	5.411991	74
73	911.879	909.169	.226	.269407	.389487	905.319	902.826	.208	.015482	.125373	73
72	904.879	902.259	.218	4.992978	.102869	898.078	895.776	.192	4.767492	4.868002	72
71	897.596	895.169	.202	.744988	4.845498	890.507	888.344	.180	.544099	.636476	71
70	889.982	887.694	.191	.521594	.613971	882.532	880.635	.158	.341997	.426596	70
69	881.958	879.939	.168	4.319491	4.404090	873.566	872.392	.098	4.161137	4.236807	69
68	872.941	871.648	.108	.138629	.214299	863.246	862.704	.045	.001870	.069403	68
67	862.561	861.904	.055	3.979360	.046893	852.469	851.752	.060	3.859050	3.921813	67
66	851.722	850.888	.069	.836538	3.899301	841.841	841.151	.058	.727394	.785587	66
65	841.030	840.225	.067	.704878	.763071	831.117	830.494	.052	.605980	.660084	65
64	830.245	829.506	.062	3.583460	3.637564	820.196	819.705	.041	3.493730	3.544041	64
63	819.260	818.654	.051	.471202	.521513	808.966	808.651	.026	.389867	.436659	63
62	807.964	807.536	.036	.367331	.414123	797.382	797.244	.011	.293610	.337216	62
61	796.313	796.062	.021	.271063	.314669	785.420	785.485	.005	.204239	.244885	61
60	784.281	784.234	.004	.181679	.222325	773.057	773.318	.022	.121137	.159093	60
59	771.846	771.997	.013	3.098561	3.136517	760.299	760.760	.038	3.043699	3.079182	59
58	759.014	759.366	.029	.021104	.056587	747.144	747.802	.055	2.971405	.004628	58
57	745.782	746.332	.046	2.948786	2.982009	733.603	734.450	.071	.903767	2.934924	57
56	732.162	732.902	.062	.881122	.912279	719.683	720.720	.086	.840359	.869615	56
55	718.161	719.092	.078	.817683	.846939	705.405	706.610	.100	.780778	.808315	55
54	703.800	704.900	.092	2.758065	2.785602	690.797	692.164	.114	2.724640	2.750604	54
53	689.107	690.369	.105	.701886	.727850	675.869	677.395	.127	.671638	.696151	53
52	674.091	675.515	.119	.648837	.673350	660.645	662.306	.138	.621472	.644676	52
51	658.779	660.338	.130	.598617	.621821	645.161	646.948	.149	.573850	.595857	51
50	643.205	644.890	.140	.550936	.572943	629.439	631.339	.158	.528533	.549444	50
49	627.391	629.190	.150	2.505553	2.526464	613.507	615.502	.166	2.485291	2.505209	49
48	611.367	613.261	.158	.462237	.482155	597.392	599.477	.174	.443920	.462921	48
47	595.157	597.143	.165	.420784	.439785	581.110	583.271	.180	.404229	.422410	47
46	578.780	580.842	.172	.381004	.399185	564.727	566.912	.182	.366037	.383459	46
45	562.302	564.388	.174	.342714	.360136	548.269	550.506	.186	.329195	.345933	45
44	545.749	547.886	.178	2.305763	2.322501	531.735	533.997	.188	2.293553	2.309662	44

	21. π = 12.3304.			20. π = 12.0361.	

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	90. π = 357.261. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	91. τ = 384.586. V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	210.928	64.595	12.19	0.105165	0.189764	224.588	64.590	13.33	0.117487	0.209864	0
1	273.435	125.014	12.37	.523682	.616059	288.013	126.850	13.43	.549523	.650033	1
2	332.764	183.252	12.46	.841211	.941721	348.673	185.909	13.56	.885237	.995128	2
3	389.504	238.496	12.58	1.136222	1.246113	406.976	243.458	13.63	1.203501	1.323581	3
4	444.043	292.328	12.64	.436615	.556695	467.192	306.339	13.40	.531244	.661786	4
5	500.368	351.147	12.44	1.756106	1.886648	526.504	362.083	13.70	1.896111	2.043568	5
6	555.849	403.290	12.71	2.117213	2.264670						

19. (section 90) **18.** (section 91)

n	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	n
						927.133	924.679	.205	5.999652	6.147109	78
77	926.847	924.277	.214	5.977398	6.124855	920.130	918.097	.169	.644145	5.774687	77
76	919.806	917.660	.179	.621891	5.752433	913.019	910.672	.196	.336541	.456621	76
75	912.658	910.196	.205	.314287	.434367	906.136	903.877	.188	.060113	.170004	75
74	905.738	903.365	.198	5.037858	5.147749	898.973	896.904	.172	4.812123	4.912633	74
73	898.537	896.354	.182	4.789869	4.890379	891.484	889.552	.161	.588731	.681108	73
72	891.008	888.964	.170	.566476	.658853	883.594	881.926	.139	.386631	.471230	72
71	883.076	881.297	.148	.364375	.448974	874.726	873.772	.079	.205773	.281443	71
70	874.161	873.099	.089	.183516	.259186	864.518	864.190	.027	.046509	.114042	70
69	863.898	863.466	.036	4.024251	4.091784	853.858	853.356	.042	3.903695	3.966458	69
68	853.181	852.574	.051	3.881433	3.944196	843.344	842.870	.040	.772045	.830238	68
67	842.611	842.032	.048	.749781	.807974	832.737	832.328	.034	.650642	.704746	67
66	831.947	831.434	.043	.628372	.682467	821.934	821.656	.023	.538403	.588714	66
65	821.087	820.705	.032	.516128	.566439	810.824	810.722	.008	.434555	.481347	65
64	809.919	809.713	.017	3.412273	3.459065	799.366	799.437	.006	3.338318	3.381924	64
63	798.399	798.368	.003	.316026	.359632	787.533	787.805	.023	.248971	.289617	63
62	786.502	786.674	.014	.226667	.267313	775.304	775.770	.039	.165899	.203853	62
61	774.209	774.575	.030	.143581	.181537	762.685	763.349	.055	.088496	.123979	61
60	761.522	762.087	.047	.066161	.101644	749.671	750.530	.072	.016244	.049467	60
59	748.439	749.200	.063	2.993888	3.027111	736.277	737.323	.087	2.948656	2.979813	59
58	734.974	735.923	.079	.926276	2.957433	722.508	723.741	.103	.885306	.914562	58
57	721.131	722.269	.095	.862898	.892154	708.384	709.784	.117	.825791	.853328	57
56	706.932	708.237	.109	.803350	.830887	693.934	695.494	.130	.769729	.795693	56
55	692.406	693.871	.122	.747252	.773216	679.168	680.885	.143	.716813	.741326	55
54	677.559	679.184	.135	2.694294	2.718807	664.108	665.960	.154	2.666744	2.689948	54
53	662.421	664.179	.147	.644178	.667382	648.793	650.767	.165	.619231	.641238	53
52	647.022	648.906	.157	.596612	.618619	633.240	635.328	.174	.574036	.594947	52
51	631.387	633.383	.166	.551358	.572269	617.481	619.662	.182	.530929	.550847	51
50	615.544	617.634	.174	.508185	.528103	601.539	603.810	.189	.489707	.508708	50
49	599.518	601.698	.182	2.466891	2.485892	585.433	587.779	.195	2.450180	2.468361	49
48	583.326	585.582	.188	.427285	.445466	569.228	571.597	.197	.412169	.429591	48
47	567.034	569.314	.190	.389186	.406608	552.949	555.369	.202	.375524	.392262	47
46	550.667	552.998	.194	.352445	.369183	536.592	539.038	.204	.340097	.356206	46
45	534.225	536.581	.196	.316914	.333023	520.203	522.656	.204	.305761	.321300	45
44	517.748	520.112	.197	2.282464	2.298003	503.813	506.261	.204	2.272391	2.287409	44

19. π = 11.7560.   **18.** π = 11.4897.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 92.$ $\pi = 413.801.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ (Bf). 6m.	λB. 12m.	93. $\pi = 446.049.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ (Bf). 6m.	λB. 12m.	Policy Years. n.
0	240.180	66.559	14.47	0.131006	0.231516	256.844	67.639	15.77	0.147474	0.257365	0
1	305.028	129.696	14.61	.579510	.689401	323.619	133.549	15.84	.615040	.735120	1
2	367.358	191.219	14.68	.936727	1.056807	392.582	205.566	15.59	.996003	1.126545	2
3	431.731	258.442	14.44	1.280853	.411395	460.511	269.408	15.93	1.382805	.530262	3
4	495.139	318.035	14.76	.652883	.800340						4

	17.					16.					
						927.663	925.424	.187	6.043818	6.191275	80
79	927.405	925.061	.195	6.021790	6.169247	920.729	918.907	.152	5.688311	5.818853	79
78	920.436	918.512	.160	5.666283	5.796825	913.690	911.556	.178	.380708	.500788	78
77	913.363	911.125	.187	.358680	.478760	906.874	904.829	.170	.104280	.214171	77
76	906.514	904.365	.179	.082251	.192142	899.783	897.924	.155	4.856291	4.956801	76
75	899.388	897.427	.163	4.834262	4.934772	892.368	890.646	.144	.632899	.725276	75
74	891.937	890.113	.152	4.610871	4.703248	884.555	883.095	.122	4.430800	4.515399	74
73	884.087	882.525	.130	.408771	.493370	875.775	875.021	.063	.249945	.325615	73
72	875.264	874.413	.071	.227914	.303584	865.668	865.534	.011	.090685	.158218	72
71	865.108	864.879	.019	.068652	.136185	855.114	854.807	.026	3.947874	.010637	71
70	854.501	854.100	.033	3.925840	3.988603	844.703	844.425	.023	.816231	3.874424	70
69	844.041	843.667	.031	3.794194	3.852387	834.202	833.987	.018	3.694836	3.748940	69
68	833.487	833.178	.026	.672794	.726898	823.505	823.421	.007	.582608	.632919	68
67	822.740	822.561	.015	.560561	.610872	812.506	812.595	.007	.478774	.525566	67
66	811.686	811.682	.000	.456721	.503513	801.162	801.422	.022	.382554	.426160	66
65	800.287	800.455	.014	.360493	.404099	789.445	789.906	.038	.293229	.333875	65
64	788.513	788.882	.031	3.271157	3.311803	777.338	777.990	.054	3.210183	3.248139	64
63	776.346	776.908	.047	.188098	.226054	764.843	765.691	.071	.132812	.168295	63
62	763.791	764.549	.063	.110712	.146195	751.958	752.999	.087	.060597	.093820	62
61	750.844	751.796	.079	.038479	.071702	738.697	739.923	.102	2.993054	.024211	61
60	737.517	738.656	.095	2.970914	.002071	725.064	726.476	.118	.929755	2.959011	60
59	723.818	725.143	.110	2.907590	2.936846	711.080	712.657	.131	2.870299	2.897836	59
58	709.766	711.257	.124	.848105	.875642	696.774	698.508	.145	.814305	.840269	58
57	695.390	697.039	.137	.792078	.818042	682.152	684.044	.158	.761465	.785978	57
56	680.697	682.504	.151	.739201	.763714	667.243	669.266	.169	.711483	.734687	56
55	665.714	667.654	.162	.689177	.712381	652.078	654.224	.179	.664068	.686075	55
54	650.477	652.539	.172	2.641714	2.663721	636.679	638.937	.188	2.618980	2.639891	54
53	635.002	637.178	.181	.596574	.617485	621.076	623.426	.196	.575994	.595912	53
52	619.324	621.591	.189	.553529	.573447	605.293	607.732	.203	.534904	.553905	52
51	603.464	605.821	.196	.512375	.531376	589.346	591.859	.209	.495523	.513704	51
50	587.438	589.870	.203	.472924	.491105	573.302	575.838	.211	.457672	.475094	50
49	571.316	573.771	.205	2.434995	2.452417	557.183	559.770	.216	2.421202	2.437940	49
48	555.119	557.625	.209	.398440	.415178	540.988	543.601	.218	.385967	.402076	48
47	538.846	541.377	.211	.363112	.379221	524.762	527.381	.218	.351838	.367377	47
46	522.540	525.078	.211	.328882	.344421	508.534	511.148	.218	.318694	.333712	46
45	506.232	508.766	.211	.295629	.310647	492.333	494.924	.216	.286421	.300970	45
44	489.954	492.463	.209	2.263238	2.277787	476.189	478.748	.213	2.254918	2.269036	44
			17.	$\pi = 11.2364.$				16.	$\pi = 10.9953.$		

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	94. π = 481.198.					95. π = 520.729.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
0	275.945	70.691	17.11	0.166535	0.286615	301.923	83.117	18.23	0.187522	0.318064	0
1	349.910	147.932	16.83	.655087	.785629	380.323	156.799	18.63	.713515	.860972	1
2	422.768	216.406	17.20	1.076479	1.223936						

	15.					14.					
82						928.144	926.099	.170	6.087566	6.235023	82
81	927.909	925.770	.178	6.065742	6.213199	921.272	919.641	.136	5.732059	5.862601	81
80	921.008	919.283	.144	5.710235	5.840777	914.297	912.356	.162	.424456	.544536	80
79	914.001	911.966	.170	5.402632	5.522712	907.542	905.689	.154	5.148028	5.257919	79
78	907.216	905.270	.162	.126203	.236094	900.516	898.848	.139	4.900040	.000550	78
77	900.158	898.397	.147	4.878215	4.978725	893.167	891.635	.128	.676650	4.769027	77
76	892.778	891.153	.135	.654825	.747202	885.426	884.152	.106	.474551	.559150	76
75	885.002	883.637	.114	.452725	.537324	876.725	876.152	.048	.293698	.369368	75
74	876.262	875.601	.055	4.271871	4.347541	866.710	866.750	.003	4.134440	4.201973	74
73	866.202	866.157	.004	.112612	.180145	856.250	856.121	.011	3.991634	.054397	73
72	855.696	855.480	.018	3.969804	.032567	845.935	845.832	.009	.859997	3.918190	72
71	845.334	845.146	.016	.838164	3.896357	835.528	835.489	.003	.738609	.792713	71
70	834.882	834.757	.010	.716772	.770876	824.929	825.019	.008	.626391	.676702	70
69	824.235	824.240	.000	3.604549	3.654860	814.029	814.291	.022	3.522569	3.569361	69
68	813.286	813.464	.015	.500722	.547514	802.786	803.219	.036	.426365	.469971	68
67	801.995	802.343	.029	.404510	.448116	791.176	791.806	.052	.337059	.377705	67
66	790.332	790.880	.040	.315195	.355841	779.179	779.998	.068	.254037	.291993	66
65	778.281	779.019	.062	.232161	.270117	766.796	767.811	.085	.176694	.212177	65
64	765.844	766.777	.078	3.154805	3.190288	754.029	755.234	.100	3.104513	3.137736	64
63	753.019	754.144	.094	.082607	.115830	740.887	742.276	.116	.037009	.068166	63
62	739.820	741.129	.109	.015084	.046241	727.377	728.950	.131	2.973756	.003012	62
61	726.249	727.744	.125	2.951809	2.981065	713.520	715.256	.145	.914353	2.941890	61
60	712.330	713.989	.138	.892380	.919917	699.342	701.235	.158	.858419	.884383	60
59	698.090	699.905	.151	2.836417	2.862381	684.854	686.902	.171	2.805649	2.830162	59
58	683.536	685.508	.164	.783613	.808126	670.079	672.258	.182	.755744	.778948	58
57	668.696	670.799	.175	.733670	.756874	655.052	657.352	.192	.708415	.730422	57
56	653.602	655.827	.185	.686299	.708306	639.793	642.204	.201	.663424	.684335	56
55	638.275	640.611	.195	.641262	.662173	624.331	626.833	.209	.620545	.640463	55
54	622.744	625.172	.202	2.598329	2.618247	608.690	611.281	.216	2.579573	2.598574	54
53	607.033	609.550	.210	.557301	.576302	592.888	595.552	.222	.540322	.558503	53
52	591.161	593.751	.216	.517987	.536168	576.987	579.675	.224	.502614	.520036	52
51	575.190	577.804	.218	.480209	.497631	561.015	563.752	.228	.466299	.483037	51
50	559.146	561.810	.222	.443819	.460557	544.968	547.730	.230	.431233	.447342	50
49	543.027	545.716	.224	2.408671	2.424780	528.888	531.657	.231	2.397289	2.412828	49
48	526.876	529.572	.225	.374637	.390176	512.806	515.571	.230	.364345	.379363	48
47	510.723	513.415	.224	.341595	.356613	496.752	499.493	.228	.332289	.346838	47
46	494.598	497.265	.222	.309435	.323984	480.754	483.463	.226	.301020	.315138	46
45	478.528	481.164	.220	.278052	.292170	464.831	467.497	.222	.270452	.284177	45
44	462.535	465.127	.216	2.247362	2.261087	449.013	451.618	.217	2.240494	2.253864	44

15. π = 10.7660.   14. π = 10.5480.

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	$x = 96.$ $\pi = 571.434.$ V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	$\frac{1}{2}$m.d.	λ(Bf). 6m.	λB. 12m.	Policy Years. n.
0	325.898	80.362	20.46	0.224964	0.372421						
		13.						**12.**			
						928.580	926.711	.156	6.130933	6.278390	84
83	928.367	926.412	.163	6.109295	6.256752	921.766	920.307	.122	5.775427	5.905969	83
82	921.525	919.982	.129	5.753788	5.884330	914.848	913.083	.147	.467823	.587903	82
81	914.579	912.728	.154	.446185	.566265	908.150	906.471	.140	.191395	.301286	81
80	907.854	906.090	.147	169757	.279648	901.180	899.686	.125	4.943407	.043917	80
79	900.856	899.277	.132	4.921768	5.022278	893.894	892.533	.113	4.720017	4.812394	79
78	893.539	892.095	.120	.698378	4.790755	886.216	885.112	.092	.517921	.602520	78
77	885.831	884.644	.099	.496281	.580880	877.587	877.178	.034	.337069	.412739	77
76	877.167	876.678	.041	.315428	.391098	867.654	867.854	.017	.177814	.245347	76
75	867.194	867.316	.010	.156172	.223705	857.283	857.313	.002	.035011	.097774	75
74	856.779	856.731	.004	4.013368	4.076131	847.052	847.110	.005	3.903379	3.961572	74
73	846.507	846.487	.002	3.881733	3.939926	836.731	836.852	.010	.781997	.836101	73
72	836.144	836.187	.004	.760348	.814452	826.220	826.468	.021	.669788	.720099	72
71	825.590	825.761	.014	.648135	.698446	815.410	815.829	.035	.565978	.612770	71
70	814.736	815.079	.029	.544319	.591111	804.261	804.849	.049	.469788	.513394	70
69	803.542	804.054	.043	3.448122	3.491728	792.747	793.531	.065	3.380499	3.421145	69
68	791.981	792.690	.059	.358825	.399471	780.849	781.821	.081	.297498	.335454	68
67	780.034	780.932	.075	.275813	.313769	768.569	769.734	.097	.220181	.255664	67
66	767.705	768.796	.091	.198484	.233967	755.907	757.262	.113	.148029	.181252	66
65	754.991	756.273	.107	.126318	.159541	742.875	744.411	.128	.080561	.111718	65
64	741.906	743.370	.122	3.058832	3.089989	729.476	731.196	.143	3.017349	3.046605	64
63	728.453	730.101	.137	2.995601	.024857	715.734	717.615	.157	2.957993	2.985530	63
62	714.654	716.465	.151	.936222	2.963759	701.674	703.711	.170	.902114	.928078	62
61	700.537	702.503	.164	.880317	.906281	687.306	689.496	.183	.849405	.873918	61
60	686.110	688.231	.177	.827578	.852091	672.653	674.973	.193	.799569	.822773	60
59	671.397	673.649	.188	2.777708	2.800912	657.750	660.191	.203	2.752318	2.774325	59
58	656.434	658.806	.198	.730419	.752426	642.618	645.168	.212	.707414	.728325	58
57	641.240	643.722	.207	.685473	.706384	627.284	629.925	.220	.664630	.684548	57
56	625.843	628.417	.214	.642643	.662561	611.772	614.501	.227	.623764	.642765	56
55	610.269	612.930	.222	.601725	.620726	596.101	598.902	.233	.584630	.602811	55
54	594.534	597.268	.228	2.562534	2.580715	580.333	583.157	.235	2.547049	2.564471	54
53	578.701	581.459	.230	.524891	.542313	564.493	567.367	.240	.510872	.527610	53
52	562.797	565.604	.234	.488648	.505386	548.578	551.477	.242	.475958	.492067	52
51	546.817	549.649	.236	.453660	.469769	532.631	535.537	.242	.442178	.457717	51
50	530.806	533.645	.237	.419800	.435339	516.683	519.584	.242	.409412	.424430	50
49	514.792	517.627	.236	2.386947	2.401965	500.763	503.640	.240	2.377548	2.392097	49
48	498.806	501.617	.234	.354991	.369540	484.897	487.743	.237	.346487	.360605	48
47	482.877	485.656	.232	.323828	.337946	469.106	471.909	.234	.316143	.329868	47
46	467.021	469.757	.228	.293376	.307101	453.418	456.161	.229	.286428	.299798	46
45	451.269	453.945	.223	.263543	.276913	437.861	440.534	.223	.257261	.270309	45
44	435.648	438.254	.217	2.234250	2.247298	422.448	425.046	.216	2.228576	2.241324	44
		13.	$\pi = 10.3400.$				**12.**	$\pi = 10.1419.$			

TABLE LXIII.

GENERAL VALUATION OF ANNUAL PREMIUM POLICIES OF 1,000.

4 PER CENT.

Policy Years. n.	11.					10.					Policy Years. n.
	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	V. 6m.	V. 12m.	½m.d.	λ(Bf). 6m.	λB. 12m.	
						928.975	927.266	.142	6.173956	6.321413	86
85	928.783	926.995	.149	6.152485	6.299942	922.212	920.910	.109	5.818449	5.948991	85
84	921.994	920.616	.115	5.796979	5.927521	915.346	913.740	.134	5.510846	5.630926	84
83	915.103	913.419	.140	.489376	.609456	908.699	907.179	.127	.234418	.344309	83
82	908.431	906.833	.133	.212948	.322839	901.783	900.445	.111	4.986431	.086941	82
81	901.488	900.074	.118	4.964959	.065469	894.551	893.346	.100	.763042	4.855419	81
80	894.230	892.949	.107	.741571	4.833948	886.932	885.982	.079	.560946	.645545	80
79	886.583	885.557	.086	4.539474	4.624073	878.368	878.108	.022	4.380096	4.455766	79
78	877.987	877.654	.028	.358623	.434293	868.511	868.855	.029	.220843	.288376	78
77	868.093	868.366	.023	.199370	.266903	858.217	858.393	.015	.078044	.140807	77
76	857.761	857.866	.009	.056569	.119332	848.064	848.267	.017	3.946416	.004609	76
75	847.570	847.702	.011	3.924939	3.983132	837.822	838.087	.022	.825041	3.879145	75
74	837.289	837.484	.016	3.803560	3.857664	827.389	827.782	.033	3.712840	3.763151	74
73	826.819	827.141	.027	.691355	.741666	816.662	817.223	.047	.609040	.655832	73
72	816.051	816.543	.041	.587550	.634342	805.598	806.327	.061	.512862	.556468	72
71	804.945	805.605	.055	.491366	.534972	794.170	795.094	.077	.423588	.464234	71
70	793.476	794.331	.071	.402085	.442731	782.362	783.472	.093	.340606	.378562	70
69	781.623	782.666	.087	3.319093	3.357049	770.175	771.478	.109	3.263312	3.298795	69
68	769.392	770.627	.103	.241788	.277271	757.610	759.099	.124	.191188	.224411	68
67	756.778	758.202	.119	.169651	.202874	744.675	746.346	.139	.123751	.154908	67
66	743.796	745.401	.134	.102199	.133356	731.379	733.231	.154	.060576	.089832	66
65	730.450	732.237	.149	.039006	.068262	717.740	719.753	.168	.001263	.028800	65
64	716.761	718.709	.162	2.979672	3.007209	703.787	705.953	.180	2.945431	2.971395	64
63	702.756	704.859	.175	.923818	2.949782	689.527	691.846	.193	.892777	.917290	63
62	688.443	690.699	.188	.871137	.895650	674.985	677.434	.204	.843004	.866208	62
61	673.848	676.233	.199	.821333	.844537	660.196	662.763	.214	.795822	.817829	61
60	659.002	661.508	.209	.774117	.796124	645.177	647.854	.223	.750995	.771906	60
59	643.928	646.543	.218	2.729253	2.750164	629.959	632.726	.231	2.708297	2.728215	59
58	628.654	631.359	.225	.686513	.706431	614.566	617.419	.238	.667526	.686527	58
57	613.203	615.995	.233	.645696	.664697	599.013	601.939	.244	.628495	.646676	57
56	597.591	600.456	.239	.606615	.624796	583.365	586.313	.246	.591028	.608450	56
55	581.885	584.773	.241	.569092	.586514	567.644	570.642	.250	.554976	.571714	55
54	566.106	569.043	.245	2.532980	2.549718	551.849	554.872	.252	2.520197	2.536306	54
53	550.252	553.214	.247	.498136	.514245	536.024	539.053	.252	.486563	.502102	53
52	534.369	537.337	.247	.464430	.479969	520.196	523.221	.252	.453956	.468974	52
51	518.481	521.446	.247	.431745	.446763	504.396	507.397	.250	.422264	.436813	51
50	502.623	505.563	.245	.399970	.414519	488.650	491.620	.248	.391388	.405506	50
49	486.818	489.728	.243	2.369004	2.383122	472.979	475.906	.244	2.361244	2.374969	49
48	471.089	473.955	.239	.338763	.352488	457.410	460.278	.239	.331743	.345113	48
47	455.462	458.269	.234	.309158	.322528	441.971	444.769	.233	.302806	.315854	47
46	439.965	442.701	.228	.280110	.293158	426.674	429.398	.227	.274370	.287118	46
45	424.611	427.274	.222	.251553	.264301	411.542	414.176	.219	.246367	.258849	45
44	409.424	411.995	.214	2.223421	2.235903	396.596	399.135	.212	2.218737	2.230972	44

11. $\pi = 9.9535.$ **10.** $\pi = 9.7739.$

TABLE LXIV.

VALUE OF f' AND LOG f FOR EVERY YEAR AND MONTH OF AGE.

4 PER CENT.

Year of Age.	$h = 0$m.	$\frac{1}{2}$m.	$1\frac{1}{2}$m.	$2\frac{1}{2}$m.	$3\frac{1}{2}$m.	$4\frac{1}{2}$m.	$5\frac{1}{2}$m.	Year of Age.
		* Dec.	Nov.	Oct.	Sept.	Aug.	July.	
$x+n$.	$f' = .961538$	.963141	.966346	.969551	.972756	.975962	.979167	$x+n$.
	Log f.							
10	$\bar{1}.980143$	$\bar{1}.980989$	$\bar{1}.982675$	$\bar{1}.984355$	$\bar{1}.986029$	$\bar{1}.987696$	$\bar{1}.989357$	10
11	.980134	.980980	.982668	.984348	.986022	.987691	.989352	11
12	.980128	.980974	.982662	.984344	.986019	.987687	.989349	12
13	.980118	.980965	.982654	.984336	.986011	.987681	.989344	13
14	.980105	.980953	.982642	.984326	.986002	.987673	.989337	14
15	$\bar{1}.980094$	$\bar{1}.980942$	$\bar{1}.982633$	$\bar{1}.984317$	$\bar{1}.985994$	$\bar{1}.987666$	$\bar{1}.989331$	15
16	.980084	.980932	.982624	.984309	.985988	.987660	.989325	16
17	.980070	.980919	.982612	.984298	.985978	.987651	.989318	17
18	.980055	.980904	.982599	.984286	.985968	.987642	.989310	18
19	.980039	.980889	.982585	.984274	.985956	.987633	.989302	19
20	$\bar{1}.980020$	$\bar{1}.980871$	$\bar{1}.982568$	$\bar{1}.984259$	$\bar{1}.985943$	$\bar{1}.987621$	$\bar{1}.989292$	20
21	.980000	.980852	.982551	.984244	.985929	.987608	.989281	21
22	.979978	.980831	.982532	.984226	.985914	.987595	.989269	22
23	.979955	.980809	.982512	.984208	.985898	.987580	.989257	23
24	.979928	.980783	.982488	.984187	.985879	.987564	.989243	24
25	$\bar{1}.979901$	$\bar{1}.980758$	$\bar{1}.982465$	$\bar{1}.984166$	$\bar{1}.985860$	$\bar{1}.987548$	$\bar{1}.989229$	25
26	.979866	.980724	.982434	.984138	.985835	.987526	.989210	26
27	.979833	.980692	.982406	.984112	.985813	.987505	.989193	27
28	.979795	.980656	.982373	.984083	.985786	.987483	989173	28
29	.979748	.980611	.982332	.984045	.985753	.987454	.989148	29
30	$\bar{1}.979704$	$\bar{1}.980569$	$\bar{1}.982294$	$\bar{1}.984011$	$\bar{1}.985722$	$\bar{1}.987426$	$\bar{1}.989124$	30
31	.979652	.980519	.982249	.983970	.985686	.987395	.989097	31
32	.979598	.980468	.982201	.983928	.985648	.987361	.989068	32
33	.979535	.980407	.982147	.983879	.985604	.987323	.989035	33
34	.979466	.980341	.982087	.983825	.985556	.987280	.988998	34
35	$\bar{1}.979386$	$\bar{1}.980265$	$\bar{1}.982017$	$\bar{1}.983762$	$\bar{1}.985500$	$\bar{1}.987232$	$\bar{1}.988956$	35
36	.979307	.980189	.981948	.983700	.985445	.987182	.988914	36
37	.979220	.980106	.981873	.983632	.985384	.987130	.988868	37
38	.979117	.980008	.981783	.983551	.985312	.987066	.988813	38
39	.979006	.979901	.981686	.983464	.985235	.986998	.988754	39
40	$\bar{1}.978883$	$\bar{1}.979784$	$\bar{1}.981580$	$\bar{1}.983368$	$\bar{1}.985149$	$\bar{1}.986923$	$\bar{1}.988689$	40
41	.978757	.979663	.981470	.983269	.985061	.986845	.988622	41
42	.978602	.979515	.981335	.983148	.984953	.986750	.988540	42
43	.978448	.979368	.981201	.983027	.984845	.986656	.988459	43
44	.978268	.979196	.981045	.982886	.984720	.986545	.988364	44
45	$\bar{1}.978073$	$\bar{1}.979009$	$\bar{1}.980876$	$\bar{1}.982733$	$\bar{1}.984583$	$\bar{1}.986426$	$\bar{1}.988260$	45
46	.977861	.978807	.980691	.982567	.984435	.986296	.988149	46
47	.977624	.978580	.980485	.982382	.984271	.986151	.988023	47
48	.977365	.978332	.980260	.982179	.984090	.985992	.987886	48
49	.977082	.978062	.980013	.981957	.983892	.985819	.987736	49
50	$\bar{1}.976767$	$\bar{1}.977760$	$\bar{1}.979740$	$\bar{1}.981711$	$\bar{1}.983673$	$\bar{1}.985626$	$\bar{1}.987570$	50
51	.976422	.977430	.979440	.981441	.983432	.985414	.987388	51
52	.976044	.977069	.979112	.981145	.983169	.985183	.987188	52
53	.975630	.976673	.978752	.980821	.982881	.984930	.986970	53

* Months of Entry for Annual Valuation Dec. 31.

$x + n + h =$ Present Age in Years and Fraction; $f' = h + (1-h)v$; $f = h + (1-h)\,vp_{x+n-1}$.

TABLE LXIV.

VALUE OF f' AND LOG f FOR EVERY YEAR AND MONTH OF AGE.

4 PER CENT.

Year of Age. $x+n$	6m.	6½m. June.	7½m. May.	8½m. April.	9½m. March.	10½m. Feb.	11½m. Jan.	Year of Age. $x+n$
	$f' = .980769$	.982372	.985577	.988782	.991987	.995192	.998397	
	Log f.							
10	1̄.990185	1̄.991011	1̄.992660	1̄.994302	1̄.995937	1̄.997567	1̄.999190	10
11	.990180	.991007	.992656	.994300	.995936	.997566	.999190	11
12	.990178	.991004	.992654	.994298	.995934	.997565	.999190	12
13	.990173	.991000	.992651	.994294	.995932	.997564	.999189	13
14	.990167	.990995	.992646	.994291	.995930	.997562	.999189	14
15	1̄.990161	1̄.990990	1̄.992642	1̄.994288	1̄.995928	1̄.997561	1̄.999188	15
16	.990156	.990985	.992638	.994285	.995926	.997560	.999188	16
17	.990149	.990979	.992633	.994281	.995923	.997558	.999187	17
18	.990142	.990972	.992628	.994277	.995919	.997556	.999187	18
19	.990135	.990965	.992622	.994272	.995917	.997555	.999186	19
20	1̄.990125	1̄.990957	1̄.992614	1̄.994267	1̄.995912	1̄.997552	1̄.999185	20
21	.990115	.990948	.992608	.994261	.995908	.997550	.999185	21
22	.990104	.990938	.992600	.994255	.995904	.997547	.999184	22
23	.990093	.990928	.992591	.994249	.995900	.997545	.999183	23
24	.990080	.990916	.992581	.994241	.995894	.997541	.999182	24
25	1̄.990067	1̄.990903	1̄.992571	1̄.994234	1̄.995889	1̄.997538	1̄.999181	25
26	.990050	.990888	.992559	.994224	.995882	.997534	.999179	26
27	.990033	.990873	.992547	.994214	.995875	.997530	.999178	27
28	.990015	.990856	.992533	.994204	.995868	.997525	.999176	28
29	.989992	.990835	.992516	.994191	.995858	.997519	.999175	29
30	1̄.989971	1̄.990815	1̄.992499	1̄.994178	1̄.995849	1̄.997514	1̄.999173	30
31	.989945	.990792	.992481	.994163	.995839	.997508	.999171	31
32	.989919	.990768	.992461	.994148	.995828	.997501	.999169	32
33	.989888	.990740	.992439	.994130	.995815	.997494	.999166	33
34	.989855	.990709	.992413	.994110	.995802	.997486	.999163	34
35	1̄.989816	1̄.990673	1̄.992384	1̄.994088	1̄.995785	1̄.997476	1̄.999160	35
36	.989777	.990638	.992355	.994065	.995769	.997466	.999157	36
37	.989735	.990599	.992324	.994041	.995752	.997456	.999154	37
38	.989684	.990553	.992286	.994012	.995732	.997444	.999150	38
39	.989630	.990504	.992246	.993981	.995709	.997431	.999146	39
40	1.989570	1̄.990449	1̄.992201	1̄.993946	1̄.995684	1̄.997416	1̄.999140	40
41	.989509	.990392	.992155	.993911	.995660	.997401	.999135	41
42	.989433	.990323	.992099	.993867	.995628	.997382	.999129	42
43	·989358	.990254	.992043	.993824	.995597	.997364	.999123	43
44	.989270	.990175	.991977	.993773	.995562	.997343	.999116	44
45	1̄.989175	1̄.990088	1̄.991907	1̄.993718	1̄.995522	1̄.997319	1̄.999108	45
46	.989071	.989993	.991829	.993659	.995480	.997293	.999099	46
47	.988956	.989887	.991743	.993592	.995432	.997265	.999090	47
48	.988830	.989772	.991649	.993519	.995381	.997234	.999080	48
49	.988692	.989646	.991547	.993440	.995324	.997200	.999069	49
50	1̄.988539	1̄.989506	1̄.991433	1̄.993351	1̄.995261	1̄.997164	1̄.999057	50
51	.988371	.989352	.991308	.993254	.995192	.997122	.999042	51
52	.988187	.989184	.991170	.993149	.995117	.997077	.999028	52
53	.987986	.989000	.991021	.993032	.995035	.997028	.999012	53

TABLE LXIV.

VALUE OF f' AND LOG f FOR EVERY YEAR AND MONTH OF AGE.

4 PER CENT.

Year of Age. $x+n$	$h = 0$m.	$\frac{1}{2}$m. * Dec.	$1\frac{1}{2}$m. Nov.	$2\frac{1}{2}$m. Oct.	$3\frac{1}{2}$m. Sept.	$4\frac{1}{2}$m. Aug.	$5\frac{1}{2}$m. July.	Year of Age. $x+n$
	$f' = .961538$	.963141	.966346	.969551	.972756	.975962	.979167	
	Log f.							
54	1̄.975175	1̄.976238	1̄.978357	1̄.980465	1̄.982563	1̄.984651	1̄.986729	54
55	1̄.974667	1̄.975752	1̄.977916	1̄.980068	1̄.982210	1̄.984341	1̄.986462	55
56	.974117	.975227	.977438	.979638	.981827	.984005	.986172	56
57	.973500	.974637	.976903	.979156	.981397	.983628	.985847	57
58	.972835	.974001	.976325	.978636	.980935	.983222	.985497	58
59	.972102	.973301	.975689	.978064	.980426	.982775	.985111	59
60	1̄.971290	1̄.972525	1̄.974984	1̄.977430	1̄.979861	1̄.982280	1̄.984685	60
61	.970397	.971672	.974210	.976733	.979242	.981736	.984216	61
62	.969425	.970743	.973367	.975975	.978568	.981144	.983706	62
63	.968344	.969710	.972430	.975132	.977818	.980487	.983140	63
64	.967161	.968580	.971404	.974210	.976998	.979768	.982521	64
65	1̄.965853	1̄.967331	1̄.970271	1̄.973192	1̄.976093	1̄.978974	1̄.981838	65
66	.964427	.965969	.969036	.972082	.975107	.978110	.981093	66
67	.962842	.964456	.967664	.970850	.974012	.977152	.980268	67
68	.961128	.962819	.966181	.969518	.972829	.976116	.979377	68
69	.959205	.960983	.964519	.968026	.971504	.974956	.978379	69
70	1̄.957120	1̄.958994	1̄.962718	1̄.966409	1̄.970070	1̄.973700	1̄.977300	70
71	.954811	.956791	.960724	.964621	.968484	.972312	.976108	71
72	.952281	.954378	.958541	.962664	.966749	.970796	.974805	72
73	.949508	.951734	.956150	.960522	.964851	.969137	.973381	73
74	.946420	.948789	.953490	.958140	.962742	.967295	.971800	74
75	1̄.943060	1̄.945588	1̄.950599	1̄.955554	1̄.960453	1̄.965297	1̄.970086	75
76	.939374	.942077	.947432	.952722	.957947	.963111	.968215	76
77	.935277	.938175	.943915	.949579	.955171	.960692	.966143	77
78	.930801	.933915	.940078	.946154	.952148	.958059	.963891	78
79	.925875	.929230	.935863	.942396	.948832	.955174	.961425	79
80	1̄.920451	1̄.924073	1̄.931229	1̄.938268	1̄.945195	1̄.952013	1̄.958726	80
81	.914509	.918428	.926162	.933761	.941228	.948569	.955790	81
82	.907916	.912169	.920552	.928777	.936848	.944773	.952554	82
83	.900757	.905378	.914475	.923386	.932117	.940677	.949070	83
84	.892777	.897815	.907720	.917403	.926875	.936145	.945221	84
85	1̄.884080	1̄.889581	1̄.900378	1̄.910913	1̄.921200	1̄.931247	1̄.941068	85
86	.874593	.880609	.892397	.903873	.915054	.925954	.936587	86
87	.863845	.870458	.883388	.895945	.908148	.920018	.931573	87
88	.852462	.859722	.873887	.887604	.900902	.913804	.926334	88
89	.832633	.841059	.857435	.873216	.888444	.903156	.917386	89
90	1̄.810236	1̄.820041	1̄.839009	1̄.857185	1̄.874629	1̄.891400	1̄.907548	90
91	.790136	.801236	.822619	.842998	.862464	.881095	.898959	91
92	.768484	.781043	.805122	.827936	.849610	.870255	.889961	92
93	.742635	.757028	.784456	.810256	.834607	.857666	.879562	93
94	.713385	.729978	.761375	.790655	.818085	.843885	.868237	94
95	1̄.681936	1̄.701052	1̄.736932	1̄.770072	1̄.800862	1̄.829612	1̄.856578	95
96	.627579	.651472	.695641	.735731	.772430	.806268	.837660	96
97	.585026	.613055	.664207	.709965	.751358	.789146	.823908	97
98	.505846	.542608	.607936	.664711	.714914	.759910	.800679	98

* Months of Entry for Annual Valuation Dec. 31.

TABLE LXIV.

VALUE OF f' AND LOG f FOR EVERY YEAR AND MONTH OF AGE.

4 PER CENT.

Year of Age. $x+n.$	6m. $f'=.980769$	6½m. June. .982372	7½m. May. .985577	8½m. April. .988782	9½m. March. .991987	10½m. Feb. .995192	11½m. Jan. .998397	Year of Age. $x+n.$
	Log f.							
54	$\bar{1}$.987765	$\bar{1}$.988798	$\bar{1}$.990856	$\bar{1}$.992905	$\bar{1}$.994944	$\bar{1}$.996973	$\bar{1}$.998994	54
55	$\bar{1}$.987518	$\bar{1}$.988572	$\bar{1}$.990673	$\bar{1}$.992763	$\bar{1}$.994843	$\bar{1}$.996913	$\bar{1}$.998974	55
56	.987252	.988328	.990474	.992609	.994734	.996848	.998952	56
57	.986952	.988055	.990251	.992437	.994611	.996774	.998928	57
58	.986630	.987760	.990011	.992251	.994479	.996696	.998901	58
59	.986275	.987435	.989747	.992047	.994334	.996609	.998873	59
60	$\bar{1}$.985882	$\bar{1}$.987076	$\bar{1}$.989455	$\bar{1}$.991821	$\bar{1}$.994173	$\bar{1}$.996514	$\bar{1}$.998841	60
61	.985451	.986682	.989134	.991573	.993997	.996408	.998806	61
62	.984982	.986253	.988785	.991302	.993805	.996294	.998768	62
63	.984461	.985777	.988397	.991003	.993593	.996167	.998726	63
64	.983891	.985256	.987974	.990676	.993360	.996028	.998680	64
65	$\bar{1}$.983262	$\bar{1}$.984682	$\bar{1}$.987507	$\bar{1}$.990315	$\bar{1}$.993104	$\bar{1}$.995875	$\bar{1}$.998630	65
66	.982578	.984057	.986999	.989922	.992825	.995710	.998574	66
67	.981819	.983363	.986436	.989486	.992517	.995526	.998514	67
68	.980999	.982614	.985827	.989017	.992184	.995327	.998448	68
69	.980082	.981777	.985147	.988492	.991812	.995105	.998375	69
70	$\bar{1}$.979089	$\bar{1}$.980871	$\bar{1}$.984412	$\bar{1}$.987924	$\bar{1}$.991409	$\bar{1}$.994866	$\bar{1}$.998295	70
71	.977993	.979870	.983600	.987299	.990966	.994602	.998208	71
72	.976796	.978777	.982714	.986615	.990482	.994314	.998113	72
73	.975487	.977584	.981746	.985870	.989954	.994000	.998009	73
74	.974036	.976260	.980674	.985044	.989370	.993653	.997894	74
75	$\bar{1}$.972463	$\bar{1}$.974825	$\bar{1}$.979512	$\bar{1}$.984149	$\bar{1}$.988737	$\bar{1}$.993277	$\bar{1}$.997771	75
76	.970744	.973259	.978245	.983174	.988048	.992869	.997636	76
77	.968843	.971526	.976844	.982098	.987288	.992418	.997487	77
78	.966777	.969645	.975324	.980930	.986465	.991929	.997326	78
79	.964517	.967587	.973663	.979656	.985566	.991397	.997151	79
80	$\bar{1}$.962044	$\bar{1}$.965337	$\bar{1}$.971849	$\bar{1}$.978264	$\bar{1}$.984586	$\bar{1}$.990817	$\bar{1}$.996961	80
81	.959354	.962891	.969878	.976755	.983524	.990190	.996754	81
82	.956394	.960200	.967713	.975098	.982360	.989502	.996529	82
83	.953208	.957305	.965386	.973320	.981112	.988766	.996287	83
84	.949689	.954111	.962824	.971365	.979741	.987958	.996023	84
85	$\bar{1}$.945896	$\bar{1}$.950671	$\bar{1}$.960067	$\bar{1}$.969264	$\bar{1}$.978270	$\bar{1}$.987093	$\bar{1}$.995740	85
86	.941807	.946966	.957103	.967008	.976693	.986167	.995438	86
87	.937237	.942827	.953798	.964498	.974941	.985139	.995103	87
88	·932467	.938513	.950360	.961892	.973125	.984076	.994757	88
89	.924330	.931164	.944518	.957475	.970056	.982282	.994174	89
90	$\bar{1}$.915401	$\bar{1}$.923115	$\bar{1}$.938145	$\bar{1}$.952672	$\bar{1}$.966729	$\bar{1}$.980344	$\bar{1}$.993546	90
91	.907623	.916118	.932624	.948525	.963865	.978682	.993009	91
92	.899490	.908813	.926880	.944226	.960905	.976968	.992457	92
93	.890109	.900407	.920297	.939316	.957536	.975023	.991833	93
94	.879920	.891297	.913193	.934038	.953929	.972948	.991168	94
95	$\bar{1}$.869458	$\bar{1}$.881965	$\bar{1}$.905951	$\bar{1}$.928681	$\bar{1}$.950280	$\bar{1}$.970856	$\bar{1}$.990501	95
96	.852543	.866934	.894359	.920155	.944504	.967560	.989454	96
97	.840299	.856093	.886056	.914085	.940414	.965238	.988719	97
98	.819713	.837947	.872269	.904075	.933710	.961452	.987527	98

JOINT LIVES MALE. CORRECTION TO BE ADDED TO THE YOUNGEST AGE FOR REDUCING TWO LIVES x, y, AND ALSO THREE LIVES x, y, z TO THE CASE OF TWO EQUAL AGES.

Y. M. denote Years and Months. For Two Lives, the Correction is given in the Second Column only. For Three Lives, if x be the Youngest Age, enter the Table jointly with $y-x$, $z-x$ to find the Correction of the *Age* x, to give u, that is, one of the two Equal Ages. With u, which increases uniformly with the age, proceed as before explained on Pages 258, 259.

Diff. Ages $y-x$	Two Lives	Difference of Years or Ages $z-x$. 0	1	2	3	4	5	6	7	8	9	Diff. Ages $y-x$
Yr.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Y. M.	Yr.
0	0 0.0	4 3.2	4 7.2	4 11.7	5 4.3	5 9.2	6 2.4	6 7.9	7 1.8	7 7.8	8 2.2	0
1	0 6.1	4 7.2	4 11.3	5 3.6	5 8.0	6 0.8	6 5.9	6 11.3	7 4.9	7 10.8	8 5.0	1
2	1 0.6	4 11.7	5 3.6	5 7.7	6 0.1	6 4.7	6 9.6	7 2.8	7 8.3	8 2.0	8 8.0	2
3	1 7.3	5 4.3	5 8.0	6 0.1	6 4.3	6 8.8	7 1.6	7 6.6	7 11.9	8 5.5	8 11.3	3
4	2 2.3	5 9.2	6 0.8	6 4.7	6 8.8	7 1.1	7 5.7	7 10.6	8 3.7	8 9.1	9 2.9	4
5	2 9.5	6 2.4	6 5.9	6 9.6	7 1.6	7 5.7	7 10.1	8 2.8	8 7.8	9 1.1	9 6.7	5
6	3 5.0	6 7.9	6 11.3	7 2.8	7 6.6	7 10.6	8 2.8	8 7.3	9 0.2	9 5.3	9 10.7	6
7	4 0.8	7 1.8	7 4.9	7 8.3	7 11.9	8 3.7	8 7.8	9 0.2	9 4.8	9 9.7	10 2.9	7
8	4 8.9	7 7.8	7 10.8	8 2.0	8 5.5	8 9.1	9 1.1	9 5.3	9 9.7	10 2.4	10 7.4	8
9	5 5.2	8 2.2	8 5.0	8 8.0	8 11.3	9 2.9	9 6.7	9 10.7	10 2.9	10 7.4	11 0.2	9
10	6 1.8	8 8.8	8 11.5	9 2.5	9 5.6	9 9.0	10 0.5	10 4.3	10 8.4	11 0.8	11 5.3	10
11	6 10.6	9 3.7	9 6.3	9 9.1	10 0.0	10 3.2	10 6.6	10 10.3	11 2.2	11 6.4	11 10.8	11
12	7 7.6	9 10.8	10 1.3	10 4.0	10 6.8	10 9.8	11 1.1	11 4.5	11 8.3	12 0.2	12 4.4	12
13	8 4.7	10 6.4	10 8.6	10 11.0	11 1.7	11 4.6	11 7.7	11 11.0	12 2.4	12 6.2	12 10.3	13
14	9 2.0	11 2.0	11 4.2	11 6.5	11 9.1	11 11.8	12 2.7	12 5.8	12 9.1	13 0.7	13 4.5	14
15	9 11.6	11 10.0	12 0.0	12 2.2	12 4.6	12 7.1	12 9.8	13 0.8	13 4.0	13 7.4	13 11.0	15
16	10 9.5	12 6.2	12 8.2	12 10.3	13 0.5	13 2.9	13 5.5	13 8.3	13 11.2	14 2.4	14 5.8	16
17	11 7.3	13 2.6	13 4.4	13 6.4	13 8.5	13 10.7	14 1.1	14 3.7	14 6.6	14 9.6	15 0.8	17
18	12 5.5	13 11.5	14 1.2	14 3.0	14 4.9	14 7.0	14 9.3	14 11.7	15 2.5	15 5.3	15 8.3	18
19	13 3.7	14 8.4	14 9.9	14 11.6	15 1.4	15 3.4	15 5.5	15 7.8	15 10.3	16 1.0	16 3.9	19
20	14 2.0	15 5.5	15 7.0	15 8.5	15 10.2	16 0.0	16 2.0	16 4.2	16 6.5	16 9.0	16 11.8	20
21	15 0.6	16 2.9	16 4.2	16 5.6	16 7.2	16 8.9	16 10.8	17 0.8	17 3.0	17 5.4	17 8.0	21
22	15 11.2	17 0.4	17 1.6	17 2.9	17 4.4	17 6.0	17 7.7	17 9.6	17 11.6	18 1.8	18 4.1	22
23	16 10.0	17 10.1	17 11.2	18 0.5	18 1.9	18 3.4	18 5.0	18 6.7	18 8.6	18 10.7	19 0.8	23
24	17 8.8	18 7.9	18 9.0	18 10.2	18 11.4	19 0.8	19 2.3	19 4.0	19 5.7	19 7.6	19 9.7	24
25	18 7.7	19 6.0	19 7.0	19 8.0	19 9.2	19 10.5	19 11.8	20 1.3	20 3.0	20 4.8	20 6.7	25
26	19 6.7	20 4.2	20 5.1	20 6.1	20 7.2	20 8.4	20 9.6	20 11.0	21 0.5	21 2.2	21 4.0	26
27	20 5.9	21 2.5	21 3.4	21 4.3	21 5.3	21 6.4	21 7.6	21 8.9	21 10.3	21 11.8	22 1.4	27
28	21 5.0	22 1.1	22 1.8	22 2.6	22 3.6	22 4.6	22 5.6	22 6.8	22 8.1	22 9.5	22 11.0	28
29	22 4.3	22 11.6	23 0.3	23 1.1	23 2.0	23 2.9	23 3.9	23 5.0	23 6.1	23 7.4	23 8.8	29
30	23 3.6	23 10.3	23 10.9	23 11.6	24 0.5	24 1.3	24 2.2	24 3.2	24 4.3	24 5.5	24 6.8	30
31	24 3.0	24 9.1	24 9.7	24 10.4	24 11.1	24 11.9	25 0.8	25 1.7	25 2.7	25 3.8	25 5.1	31
32	25 2.4	25 8.0	25 8.5	25 9.1	25 9.8	25 10.6	25 11.4	26 0.2	26 1.2	26 2.2	26 3.2	32
33	26 1.9	26 7.1	26 7.6	26 8.2	26 8.8	26 9.4	26 10.1	26 10.9	26 11.8	27 0.7	27 1.8	33
34	27 1.4	27 6.1	27 6.6	27 7.1	27 7.7	27 8.3	27 9.0	27 9.7	27 10.4	27 11.3	28 0.3	34
35	28 1.0	28 5.3	28 5.7	28 6.1	28 6.7	28 7.2	28 7.8	28 8.5	28 9.2	28 10.0	28 10.8	35
36	29 0.6	29 4.6	29 4.9	29 5.3	29 5.7	29 6.2	29 6.8	29 7.4	29 8.1	29 8.9	29 9.7	36
37	30 0.2	30 3.8	30 4.2	30 4.6	30 5.0	30 5.4	30 5.9	30 6.5	30 7.1	30 7.8	30 8.6	37
38	30 11.9	31 3.1	31 3.4	31 3.8	31 4.3	31 4.7	31 5.1	31 5.6	31 6.2	31 6.8	31 7.5	38
39	31 11.5	32 2.5	32 2.9	32 3.1	32 3.4	32 3.8	32 4.3	32 4.8	32 5.3	32 5.9	32 6.5	39
40	32 11.3	33 2.0	33 2.3	33 2.6	33 2.8	33 3.2	33 3.6	33 4.1	33 4.5	33 5.0	33 5.5	40
41	33 11.0	34 1.6	34 1.8	34 2.0	34 2.3	34 2.6	34 3.0	34 3.4	34 3.8	34 4.3	34 4.8	41
42	34 10.8	35 1.1	35 1.4	35 1.6	35 1.8	35 2.0	35 2.4	35 2.8	35 3.2	35 3.6	35 4.1	42
43	35 10.6	36 0.6	36 0.9	36 1.1	36 1.3	36 1.6	36 1.9	36 .2.2	36 2.5	36 2.9	36 3.3	43
44	36 10.4	37 0.4	37 0.5	37 0.7	37 0.9	37 1.2	37 1.5	37 1.8	37 2.1	37 2.4	37 2.8	44
		0	1	2	3	4	5	6	7	8	9	

$q = 1.099713375$; $2q^c = 1 + q^{y-x}$. For Three Lives, $2q^{c'} = 1 + q^{y-x} + q^{z-x}$; $rs = v'$.

TABLE LXV.

JOINT LIVES MALE.   CORRECTION TO BE ADDED TO THE YOUNGEST AGE FOR REDUCING TWO LIVES x, y, AND ALSO THREE LIVES x, y, z TO THE CASE OF TWO EQUAL AGES.

Diff. Ages. $y-x$.	10		12		14		16		18		20		25		30		35		40		Diff Ages. $y-x$.
Years.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Y.	M.	Years.
0	8	8.8	9	10.8	11	2.0	12	6.2	13	11.5	15	5.5	19	6.0	23	10.3	28	5.3	33	2.0	0
1	8	11.5	10	1.3	11	4.2	12	8.2	14	1.2	15	7.0	19	7.0	23	10.9	28	5.7	33	2.3	1
2	9	2.5	10	4.0	11	6.5	12	10.3	14	3.0	15	8.5	19	8.0	23	11.6	28	6.1	33	2.6	2
3	9	5.6	10	6.8	11	9.1	13	0.5	14	4.9	15	10.2	19	9.2	24	0.5	28	6.7	33	2.8	3
4	9	9.0	10	9.8	11	11.8	13	2.9	14	7.0	16	0.0	19	10.5	24	1.3	28	7.2	33	3.2	4
5	10	0.5	11	1.1	12	2.7	13	5.5	14	9.3	16	2.0	19	11.8	24	2.2	28	7.8	33	3.6	5
6	10	4.3	11	4.5	12	5.8	13	8.3	14	11.7	16	4.2	20	1.3	24	3.2	28	8.5	33	4.1	6
7	10	8.4	11	8.3	12	9.1	13	11.2	15	2.5	16	6.5	20	3.0	24	4.3	28	9.2	33	4.5	7
8	11	0.8	12	0.2	13	0.7	14	2.4	15	5.3	16	9.0	20	4.8	24	5.5	28	10.0	33	5.0	8
9	11	5.3	12	4.4	13	4.5	14	5.8	15	8.3	16	11.8	20	6.7	24	6.8	28	10.8	33	5.5	9
10	11	10.3	12	9.0	13	8.6	14	9.6	15	11.5	17	2.7	20	8.8	24	8.3	28	11.8	33	6.2	10
11	12	3.5	13	1.7	14	1.1	15	1.4	16	3.1	17	5.9	20	11.2	24	9.8	29	0.8	33	7.0	11
12	12	9.0	13	6.7	14	5.6	15	5.6	16	6.8	17	9.2	21	1.5	24	11.5	29	2.0	33	7.7	12
13	13	2.6	14	0.0	14	10.4	15	10.1	16	10.8	18	0.7	21	4.1	25	1.3	29	3.1	33	8.4	13
14	13	8.6	14	5.6	15	3.6	16	2.8	17	3.0	18	4.5	21	6.8	25	3.3	29	4.5	33	9.3	14
15	14	2.9	14	11.4	15	9.0	16	7.8	17	7.6	18	8.5	21	10.0	25	5.4	29	5.9	33	10.2	15
16	14	9.6	15	5.6	16	2.8	17	1.1	18	0.5	19	1.0	22	1.2	25	7.8	29	7.6	33	11.3	16
17	15	4.3	16	0.0	16	8.8	17	6.6	18	5.5	19	5.5	22	4.7	25	10.2	29	9.2	34	0.4	17
18	15	11.5	16	6.8	17	3.0	18	0.5	18	10.9	19	10.5	22	8.3	26	1.0	29	11.2	34	1.8	18
19	16	7.0	17	1.9	17	9.7	18	6.6	19	4.6	20	3.6	23	0.4	26	3.8	30	1.2	34	3.1	19
20	17	2.7	17	9.2	18	4.5	19	1.0	19	10.5	20	9.0	23	4.5	26	6.9	30	3.2	34	4.4	20
21	17	10.7	18	4.7	18	11.8	19	7.7	20	4.7	21	2.8	23	9.0	26	10.3	30	5.6	34	6.1	21
22	18	6.7	19	0.5	19	7.1	20	2.6	20	11.2	21	8.8	24	1.7	27	1.8	30	8.2	34	7.8	22
23	19	3.2	19	8.6	20	2.8	20	10.0	21	6.0	22	3.1	24	6.8	27	5.6	30	10.9	34	9.7	23
24	19	11.9	20	4.9	20	10.7	21	5.4	22	1.0	22	9.6	25	0.1	27	9.6	31	1.8	34	11.8	24
25	20	8.8	21	1.5	21	6.8	22	1.2	22	8.3	23	4.5	25	5.6	28	1.9	31	4.9	35	1.9	25
26	21	5.9	21	10.2	22	3.4	22	9.2	23	4.0	23	11.6	25	11.5	28	6.5	31	8.4	35	4.3	26
27	22	3.2	22	7.3	23	0.0	23	5.5	23	11.9	24	7.1	26	5.8	28	11.4	32	0.0	35	7.0	27
28	23	0.7	23	4.4	23	8.9	24	2.0	24	7.9	25	2.8	27	0.2	29	4.4	32	3.8	35	9.6	28
29	23	10.4	24	1.9	24	6.0	24	10.8	25	4.3	25	10.8	27	7.0	29	10.0	32	8.0	36	0.6	29
30	24	8.3	24	11.5	25	3.3	25	7.8	26	1.0	26	6.9	28	1.9	30	3.6	33	0.2	36	3.8	30
31	25	6.4	25	9.4	26	0.8	26	4.9	26	9.7	27	3.4	28	9.2	30	9.6	33	4.9	36	7.2	31
32	26	4.4	26	7.2	26	10.4	27	2.3	27	6.8	28	0.0	29	4.8	31	3.8	33	9.8	36	10.8	32
33	27	2.9	27	5.4	27	8.4	27	11.9	28	4.1	28	8.9	30	0.6	31	10.4	34	3.0	37	2.8	33
34	28	1.3	28	3.6	28	6.4	28	9.7	29	1.6	29	6.0	30	8.8	32	5.2	34	8.5	37	7.0	34
35	28	11.8	29	2.0	29	4.5	29	7.6	29	11.2	30	3.2	31	4.9	33	0.2	35	2.2	37	11.3	35
36	29	10.6	30	0.5	30	2.9	30	5.6	30	8.9	31	0.8	32	1.6	33	7.7	35	8.3	38	4.0	36
37	30	9.4	30	11.2	31	1.3	31	3.8	31	7.0	31	10.4	32	10.3	34	3.4	36	2.6	38	8.9	37
38	31	8.2	31	9.8	31	11.9	32	2.2	32	5.0	32	8.3	33	7.3	34	11.2	36	9.2	39	2.0	38
39	32	7.1	32	8.6	32	10.4	33	0.6	33	3.2	33	6.2	34	4.4	35	7.3	37	4.1	39	7.6	39
40	33	6.2	33	7.7	33	9.3	33	11.3	34	1.8	34	4.4	35	1.9	36	3.8	37	11.3	40	1.3	40
41	34	5.4	34	6.7	34	8.2	34	10.1	35	0.2	35	2.8	35	11.5	37	0.4	38	6.7	40	7.4	41
42	35	4.6	35	5.8	35	7.2	35	8.9	35	10.8	36	1.2	36	9.2	37	9.2	39	2.4	41	1.8	42
43	36	3.8	36	4.9	36	6.2	36	7.8	36	9.6	36	11.8	37	7.2	38	6.2	39	10.3	41	8.4	43
44	37	3.2	37	4.2	37	5.4	37	6.8	37	8.5	37	10.6	38	5.4	39	3.6	40	6.6	42	3.4	44
	10		12		14		16		18		20		25		30		35		40		

TABLE LXVI.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

3 PER CENT.

Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000.0	2,123,700.7	5.000000	6.327093	55	11,622.5	120,383.7	4.065300	5.080567
11	95,833.6	2,023,700.7	4.981518	.306146	56	10,860.8	108,761.2	.035862	.036474
12	91,836.2	1,927,867.1	.963014	.285077	57	10,123.4	97,900.4	.005325	4.990785
13	88,003.5	1,836,030.9	.944500	.263880	58	9,409.27	87,776.97	3.973556	.943381
14	84,326.7	1,748,027.4	.925965	.242548	59	8,718.77	78,367.70	.940455	.894137
15	80,798.8	1,663,700.7	4.907405	6.221075	60	8,051.71	69,648.93	3.905888	4.842915
16	77,414.3	1,582,901.9	.888821	.199454	61	7,407.95	61,597.22	.869698	.789562
17	74,168.8	1,505,487.6	.870221	.177677	62	6,787.68	54,189.27	.831721	.733913
18	71,054.1	1,431,318.8	.851589	.155737	63	6,191.56	47,401.59	.791800	.675793
19	68,065.5	1,360,264.7	.832927	.133624	64	5,619.78	41,210.03	.749719	.615003
20	65,198.3	1,292,199.2	4.814236	6.111330	65	5,073.05	35,590.25	3.705269	4.551331
21	62,446.2	1,227,000.9	.795506	.088845	66	4,552.02	30,517.20	.658204	.484545
22	59,804.5	1,164,554.7	.776734	.066160	67	4,057.79	25,965.18	.608289	.414391
23	57,269.2	1,104,750.2	.757921	.043264	68	3,590.89	21,907.39	.555202	.340591
24	54,835.1	1,047,481.0	.739059	.020146	69	3,152.73	18,316.50	.498687	.262843
25	52,498.3	992,645.9	4.720145	5.996794	70	2,743.64	15,163.77	3.438327	4.180807
26	50,254.7	940,147.6	.701177	.973196	71	2,364.81	12,420.13	.373796	.094127
27	48,099.2	889,892.9	.682138	.949337	72	2,016.73	10,055.32	.304647	.002396
28	46,029.1	841,793.7	.663032	.925206	73	1,699.97	8,038.59	.230440	3.905180
29	44,040.7	795,764.6	.643854	.900785	74	1,414.76	6,338.62	.150684	.801994
30	42,128.7	751,723.9	4.624578	5.876058	75	1,160.79	4,923.86	3.064753	3.692305
31	40,291.7	709,595.2	.605216	.851011	76	937.787	3,763.069	2.972104	.575542
32	38,525.6	669,303.5	.585749	.825623	77	744.871	2,825.282	.872081	.451062
33	36,827.7	630,777.9	.566175	.799877	78	580.583	2,080.411	.763864	.318149
34	35,194.4	593,950.2	.546473	.773750	79	443.298	1,499.828	.646696	.176041
35	33,623.0	558,755.8	4.526637	5.747222	80	330.883	1056.530	2.519675	3.023882
36	32,109.7	525,132.8	.506636	.720269	81	240.883	725.647	.381806	2.860725
37	30,653.6	493,023.1	.486481	.692867	82	170.630	484.764	.232055	.685531
38	29,251.6	462,369.5	.466150	.664990	83	117.251	314.134	.069115	.497115
39	27,900.6	433,117.9	.445613	.636606	84	77.9575	196.8833	1.891858	.294209
40	26,598.4	405,217.3	4.424856	5.607688	85	49.9624	118.9258	1.698643	2.075276
41	25,342.5	378,618.9	.403850	.578203	86	30.7632	68.9634	.488032	1.838618
42	24,132.0	353,276.4	.382593	.548115	87	18.1321	38.2002	.258447	.582065
43	22,963.0	329,144.4	.361029	.517387	88	10.1711	20.0681	.007367	.302506
44	21,835.0	306,181.4	.339153	.485979	89	5.41405	9.89699	0.733522	0.995504
45	20,745.2	284,346.4	4.316917	5.453848	90	2.63036	4.48294	0.420015	0.651563
46	19,692.3	263,601.2	.294296	.420947	91	1.15271	1.85258	.061718	.267777
47	18,674.3	243,908.9	.271245	.387228	92	.460488	.699874	$\overline{1}$.663218	$\overline{1}$.845020
48	17,689.8	225,234.6	.247723	.352635	93	.166501	.239386	.221417	.379099
49	16,737.2	207,544.8	.223683	.317112	94	.053446	.072885	$\overline{2}$.727916	$\overline{2}$.862638
50	15,815.3	190,807.6	4.199077	5.280595	95	.0149939	.0194392	$\overline{2}$.175915	$\overline{2}$.288678
51	14,922.4	174,992.3	.173838	.243019	96	.0036393	.0044453	$\overline{3}$.561017	$\overline{3}$.647901
52	14,057.7	160,069.9	.147913	.204310	97	.0006877	.0008060	$\overline{4}$.837404	$\overline{4}$.906335
53	13,220.0	146,012.2	.121230	.164389	98	.0001068	.0001183	.028687	.072985
54	12,408.5	132,792.2	.093720	.123172	99	.0000115	.0000115	$\overline{5}$.061608	$\overline{5}$.060698

$$\text{FORMULA,} \quad D_{xx} = \frac{l_x l_x v^x}{l_{10} v^{10}} = \frac{l_x D_x}{D_{10}}.$$

TABLE LXVII.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

$3\tfrac{1}{2}$ PER CENT.

Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000.0	1,961,020.2	5.000000	6.292482	55	9,346.69	93,597.81	3.970658	4.971266
11	95,370.3	1,861,020.2	4.979413	.269751	56	8,691.95	84,251.12	.939117	.925576
12	90,950.9	1,765,649.9	.958807	.246904	57	8,062.64	75,559.17	.906477	.878287
13	86,733.9	1,674,699.0	.938189	.223937	58	7,457.70	67,496.53	.872605	.829281
14	82,708.9	1,587,965.1	.917552	.200841	59	6,877.02	60,038.83	.837400	.778432
15	78,865.7	1,505,256.2	4.896888	6.177610	60	6,320.19	53,161.81	3.800730	4.725599
16	75,197.1	1,426,390.5	.876201	.154238	61	5,786.79	46,841.62	.762438	.670632
17	71,696.4	1,351,193.4	.855497	.130718	62	5,276.63	41,054.83	.722357	.613364
18	68,353.9	1,279,497.0	.834763	.107039	63	4,789.97	35,778.20	.680333	.553618
19	65,162.5	1,211,143.1	.813998	.083196	64	4,326.61	30,988.23	.636148	.491197
20	62,116.1	1,145,980.6	4.793204	6.059178	65	3,886.83	26,661.62	3.589596	4.425887
21	59,206.6	1,083,864.5	.772370	.034975	66	3,470.79	22,774.79	.540428	.357454
22	56,428.0	1,024,657.9	.751495	.010579	67	3,079.00	19,304.00	.488410	.285647
23	53,774.8	968,229.9	.730579	5.985979	68	2,711.56	16,225.00	.433219	.210185
24	51,240.7	914,455.1	.709615	.961163	69	2,369.20	13,513.44	.374601	.130766
25	48,819.8	863,214.4	4.688596	5.936118	70	2,051.82	11,144.24	3.312139	4.047050
26	46,507.8	814,394.6	.667526	.910835	71	1,759.97	9,092.42	.245504	3.958680
27	44,298.0	767,886.8	.646384	.885297	72	1,493.66	7,332.45	.174252	.865249
28	42,186.7	723,588.8	.625175	.859492	73	1,252.97	5,838.79	.097942	.766323
29	40,169.1	681,402.1	.603892	.833403	74	1,037.73	4,585.82	.016083	.661417
30	38,239.7	641,233.0	4.582514	5.807016	75	847.323	3,548.091	2.928049	3.549995
31	36,395.5	602,993.3	.561048	.780312	76	681.234	2,700.768	.833296	.431487
32	34,632.2	566,597.8	.539480	.753275	77	538.481	2,019.534	.731170	.305251
33	32,946.0	531,965.6	.517802	.725883	78	417.686	1,481.053	.620850	.170570
34	31,332.6	499,019.6	.495997	.698118	79	317.380	1,063.367	.501579	.026683
35	29,789.1	467,687.0	4.474057	5.669955	80	235.752	745.987	2.372455	2.872731
36	28,310.9	437,897.9	.451954	.641372	81	170.798	510.235	.232483	.707771
37	26,896.5	409,587.0	.429696	.612346	82	120.400	339.437	.080628	.530759
38	25,542.4	382,690.5	.407262	.582848	83	82.3353	219.0374	1.915586	.340518
39	24,244.9	357,148.1	.384621	.552849	84	54.4786	136.7021	.736226	.135776
40	23,001.8	332,903.2	4.361761	5.522318	85	34.7462	82.2235	1.540907	1.914996
41	21,809.9	309,901.4	.338653	.491224	86	21.2909	47.4773	.328193	.676486
42	20,667.7	288,091.5	.315292	.459530	87	12.4884	26.1864	.096505	.418076
43	19,571.5	267,423.8	.291624	.427200	88	6.97143	13.69801	0.843322	.136657
44	18,520.2	247,852.3	.267646	.394193	89	3.69296	6.72658	.567374	0.827795
45	17,510.8	229,332.1	4.243307	5.360465	90	1.78552	3.03362	0.251764	0.481961
46	16,541.7	211,821.3	.218581	.325970	91	.778687	1.248099	$\overline{1}$.891363	.096249
47	15,610.9	195,279.6	.193429	.290657	92	.309572	.469412	.490761	$\overline{1}$.671554
48	14,716.4	179,668.7	.167802	.254473	93	.111393	.159840	.046857	.203685
49	13,856.7	164,952.3	.141660	.217358	94	.035584	.048447	$\overline{2}$.551252	$\overline{2}$.685267
50	13,030.2	151,095.6	4.114950	5.179252	95	.0099346	.0128629	$\overline{3}$.997148	$\overline{2}$.109339
51	12,235.1	138,065.4	.087609	.140085	96	.0023997	.0029283	.380147	$\overline{3}$.466616
52	11,470.5	125,830.3	.059581	.099785	97	.0004513	.0005286	$\overline{4}$.654431	$\overline{4}$.723127
53	10,734.8	114,359.8	.030795	.058273	98	.0000698	.0000773	$\overline{5}$.843611	$\overline{5}$.888179
54	10,027.2	103,625.0	.001180	.015465	99	.0000075	.0000075	$\overline{6}$.874428	$\overline{6}$.875061

TABLE LXVIII.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

4 PER CENT.

Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000	1,819,554.9	5.000000	6.259966	55	7,524.42	72,918.61	3.876473	4.862838
11	94,911.8	1,719,554.9	4.977320	.235416	56	6,963.70	65,394.19	.842840	.815539
12	90,078.5	1,624,643.1	.954621	.210758	57	6,428.46	58,430.49	.808107	.766639
13	85,488.9	1,534,564.6	.931910	.185985	58	5,917.54	52,002.03	.772141	.716029
14	81,129.7	1,449,075.7	.909180	.161091	59	5,430.55	46,084.49	.734844	.663555
15	76,988.0	1,367,946.0	4.886423	6.136069	60	4,966.85	40,653.94	3.696081	4.609103
16	73,054.0	1,290,958.0	.863644	.110912	61	4,525.80	35,687.09	.655695	.552511
17	69,318.0	1,217,904.0	.840846	.085613	62	4,106.97	31,161.29	.613522	.493615
18	65,768.7	1,148,586.0	.818019	.060164	63	3,710.27	27,054.32	.569405	.432237
19	62,396.8	1,082,817.3	.795162	.034555	64	3,335.24	23,344.05	.523127	.368176
20	59,193.5	1,020,420.5	4.772274	6.008779	65	2,981.82	20,008.81	3.474482	4.301221
21	56,149.6	961,227.0	.749347	5.982826	66	2,649.85	17,026.99	.423221	.231138
22	53,257.4	905,077.4	.726380	.956686	67	2,339.42	14,377.14	.369109	.157673
23	50,509.1	851,820.0	.703370	.930348	68	2,050.34	12,037.72	.311826	.080544
24	47,897.5	801,310.9	.680313	.903801	69	1,782.85	9,987.38	.251115	3.999451
25	45,415.3	753,413.4	4.657202	5.877033	70	1,536.59	8,204.53	3.186559	3.914054
26	43,056.4	707,998.1	.634038	.850032	71	1,311.69	6,667.94	.117832	.823992
27	40,813.4	664,941.7	.610803	.822783	72	1,107.87	5,356.25	.044487	.728861
28	38,681.4	624,128.3	.587502	.795274	73	924.875	4,248.381	2.966083	.628223
29	36,654.4	585,446.9	.564126	.767488	74	762.311	3,323.506	.882132	.521597
30	34,726.0	548,792.5	4.540655	5.739408	75	619.448	2,561.195	2.792005	3.408443
31	32,892.4	514,066.5	.517096	.711019	76	495.632	1,941.747	.695159	.288193
32	31,148.3	481,174.1	.493434	.682303	77	389.888	1,446.115	.590940	.160203
33	29,489.2	450,025.8	.469663	.653237	78	300.973	1,056.227	.478527	.023757
34	27,910.4	420,536.6	.445766	.623804	79	227.595	755.254	.357163	2.878093
35	26,407.8	392,626.2	4.421732	5.593979	80	168.247	527.659	2.225946	2.722353
36	24,976.8	366,218.4	397537	.563740	81	121.306	359.412	.083881	.555593
37	23,614.8	341,241.6	.373185	.533062	82	85.1007	238.1057	1.929933	.376770
38	22,318.1	317,626.8	.348658	.501918	83	57.9159	153.0050	.762798	.184706
39	21,082.6	295,308.7	.323925	.470276	84	38.1369	95.0891	.581345	1.978131
40	19,905.4	274,226.1	4.298971	5.438109	85	24.2066	56.9522	1.383933	1.755511
41	18,783.2	254,320.7	.273770	.405392	86	14.7613	32.7456	.169126	.515153
42	17,714.0	235,537.5	.248317	.372060	87	8.61678	17.98425	0.935345	.254892
43	16,693.8	217,823.5	.222555	.338105	88	4.78706	9.36747	.680069	0.971622
44	15,721.1	201,129.7	.196484	.303476	89	2.52364	4.58041	.402027	.660904
45	14,792.9	185,408.6	4.170053	5.268130	90	1.21430	2.05677	0.084325	0.313186
46	13,907.0	170,615.7	.143233	.232019	91	.52702	.84247	$\overline{1}$.721831	$\overline{1}$.925554
47	13,061.3	156,708.7	.115988	.195093	92	.20851	.31545	.319136	.498930
48	12,253.8	143,647.4	.088269	.157298	93	.07467	.10694	$\overline{2}$.873138	.029140
49	11,482.4	131,393.6	.060033	.118574	94	.023738	.032266	.375441	$\overline{2}$.508745
50	10,745.6	119,911.2	4.031230	5.078860	95	.0065954	.008528	$\overline{3}$.819244	$\overline{3}$.930847
51	10,041.5	109,165.6	.001797	.038086	96	.0015854	.0019326	.200150	.286152
52	9,368.61	99,124.1	3.971675	4.996179	97	.0002967	.0003472	$\overline{4}$.472341	$\overline{4}$.540637
53	8,725.61	89,755.4	.940796	.953061	98	.0000456	.0000505	$\overline{5}$.659427	$\overline{5}$.703515
54	8,111.27	81,029.8	.909089	.908645	99	.0000049	.0000049	$\overline{6}$.688152	$\overline{6}$.688153

$$\text{FORMULA,} \quad D_{xx} = \frac{l_x l_x v^x}{l_{10} v^{10}} = \frac{l_x D_x}{D_{10}}.$$

TABLE LXIX.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

$4\frac{1}{2}$ PER CENT.

Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000	1,695,824.4	5.000000	6.229381	55	6,063.75	56,920.00	3.782741	4.755265
11	94,457.8	1,595,824.4	4.975238	.202985	56	5,585.02	50,856.25	.747025	.706344
12	89,218.7	1,501,366.6	.950456	.176487	57	5,131.07	45,271.23	.710208	.655822
13	84,267.7	1,412,147.9	.925661	.149880	58	4,700.67	40,140.16	.672160	.603579
14	79,588.3	1,327,880.2	.900849	.123159	59	4,293.19	35,439.49	.632780	.549487
15	75,163.8	1,248,291.9	4.876009	6.096316	60	3,907.82	31,146.30	3.591934	4.493407
16	70,981.6	1,173,128.1	.851146	.069345	61	3,543.76	27,238.48	.549465	.435183
17	67,029.5	1,102,146.5	.826266	.042239	62	3,200.44	23,694.72	.505209	.374652
18	63,293.0	1,035,117.0	.801356	.014989	63	2,877.46	20,494.28	.459009	.311633
19	59,760.6	971,824.0	.776415	5.987588	64	2,574.23	17,616.82	.410648	.245927
20	56,421.6	912,063.4	4.751445	5.960025	65	2,290.45	15,042.59	3.359920	4.177323
21	53,264.1	855,641.8	.726435	.932292	66	2,025.70	12,752.14	.306576	.105583
22	50,278.7	802,377.7	.701384	.904379	67	1,779.84	10,726.44	.250382	.030456
23	47,456.1	752,099.0	.676292	.876275	68	1,552.44	8,946.60	.191015	3.951658
24	44,787.0	704,642.9	.651152	.847969	69	1,343.45	7,394.16	.128221	.868889
25	42,262.8	659,855.9	4.625958	5.819449	70	1,152.34	6,050.71	3.061582	3.781806
26	39,875.9	617,593.1	.600711	.790702	71	978.976	4,898.367	2.990772	.690051
27	37,617.8	577,717.2	.575393	.761715	72	822.894	3,919.391	.915344	.593219
28	35,482.1	540,099.4	.550009	.732474	73	683.688	3,096.497	.834858	.490871
29	33,461.9	504,617.3	.524551	.702962	74	560.821	2,412.809	.748824	.382523
30	31,549.8	471,155.4	4.498996	5.673164	75	453.537	1,851.988	2.656613	3.267638
31	29,740.9	439,605.6	.473354	.643063	76	361.148	1,398.451	.557685	.145647
32	28,029.2	409,864.7	.447610	.612640	77	282.737	1,037.303	.451383	.015906
33	26,409.2	381,835.5	.421755	.581876	78	217.213	754.566	.336886	2.877697
34	24,875.7	355,426.3	.395775	.550750	79	163.471	537.353	.213440	.730260
35	23,423.9	330,550.6	4.369659	5.519238	80	120.265	373.882	2.080140	2.572735
36	22,048.6	307,126.7	.343381	.487317	81	86.2963	253.6169	1.935992	.404178
37	20,746.6	285,078.1	.316946	.454964	82	60.2506	167.3206	.779961	.223550
38	19,513.5	264,331.5	.290336	.422149	83	40.8078	107.0700	.610743	.029668
39	18,345.1	244,818.0	.263520	.388843	84	26.7428	66.2622	.427207	1.821266
40	17,237.9	226,472.9	4.236483	5.355016	85	16.8932	39.5194	1.227712	1.596810
41	16,188.2	209,235.0	.209199	.320634	86	10.2523	22.6262	.010822	.354612
42	15,193.7	193,046.8	.181663	.285663	87	5.95604	12.37393	0.774958	.092508
43	14,250.1	177,853.1	.153819	.250061	88	3.29306	6.41789	.517599	0.807392
44	13,355.6	163,603.0	.125664	.213791	89	1.727726	3.124835	.237475	.494826
45	12,506.9	150,247.4	4.097150	5.176807	90	.8273495	1.3971089	1.917689	0.145230
46	11,701.7	137,740.5	.068248	.139062	91	.3573668	.5697594	.553113	1.755692
47	10,937.5	126,038.8	.038919	.100504	92	.1407129	.2123926	.148334	.327139
48	10,212.1	115,101.3	.009117	.061080	93	.0501480	.0716797	2.700254	2.855396
49	9,523.53	104,889.19	3.978798	.020731	94	.0158662	.0215317	.200474	.333078
50	8,869.78	95,365.66	3.947913	4.979392	95	.0043873	.0056654	3.642193	3.753234
51	8,248.90	86,495.88	.916396	.936995	96	.0010496	.0012782	.021017	.106595
52	7,659.35	78,246.98	.884192	.893468	97	.0001954	.0002286	4.291125	4.359084
53	7,099.54	70,587.63	.851230	.848729	98	.0000299	.0000331	5.476129	5.520012
54	6,568.09	63,488.09	.817439	.802692	99	.0000031	.0000032	6.502770	6.502770

TABLE LXX.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

5 PER CENT.

Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000	1,587,002.3	5.000000	6.200578	55	4,891.66	44,516.96	3.689456	4.648526
11	94,008.0	1,487,002.3	4.973165	.172312	56	4,484.00	39,625.30	.651666	.597973
12	88,369.2	1,392,994.3	.946309	.143949	57	4,099.94	35,141.30	.612777	.545818
13	83,069.6	1,304,625.1	.919442	.115486	58	3,738.14	31,041.36	.572656	.491941
14	78,083.1	1,221,555.5	.892557	.086913	59	3,397.83	27,303.22	.531202	.436214
15	73,391.2	1,143,472.4	4.865644	6.058226	60	3,078.10	23,905.39	3.488283	4.378496
16	68,977.6	1,070,081.2	.838708	.029417	61	2,778.06	20,827.29	.443742	.318633
17	64,826.9	1,001,103.6	.811755	.000479	62	2,496.97	18,049.23	.397413	.256459
18	60,921.7	936,276.7	.784772	5.971404	63	2,234.29	15,552.26	.349139	.191792
19	57,247.7	875,355.0	.757758	.942184	64	1,989.33	13,317.97	.298706	.124438
20	53,791.7	818,107.3	4.730715	5.912810	65	1,761.59	11,328.64	3.245905	4.054178
21	50,539.6	764,315.6	.703632	.883273	66	1,550.55	9,567.05	.190487	3.980778
22	47,479.7	713,776.0	.676508	.853562	67	1,355.88	8,016.50	.132220	.903985
23	44,600.8	666,296.3	.649343	.823667	68	1,177.01	6,660.62	.070781	.823515
24	41,891.9	621,695.5	.622130	.793578	69	1,013.71	5,483.61	.005913	.739067
25	39,342.6	579,803.6	4.594863	5.763281	70	865.370	4,469.901	2.937202	3.650298
26	36,943.9	540,461.0	.567543	.732764	71	731.675	3,604.531	.864318	.556849
27	34,685.8	503,517.1	.540152	.702014	72	612.094	2,872.856	.786818	.458314
28	32,560.8	468,831.3	.512695	.671017	73	506.125	2,260.762	.704258	.354255
29	30,560.7	436,270.5	.485163	.639756	74	413.191	1,754.637	.616151	.244187
30	28,677.1	405,709.8	4.457536	5.608215	75	332.558	1,341.446	2.521868	3.127573
31	26,904.3	377,032.7	.429821	.576379	76	263.552	1,008.888	.420866	.003843
32	25,235.0	350,128.4	.402003	.544227	77	205.348	745.336	.312491	2.872352
33	23,663.3	324,893.4	.374076	.511741	78	157.008	539.988	.195922	.732384
34	22,183.1	301,230.1	.346023	.478898	79	117.599	382.980	.070402	.583176
35	20,789.0	279,047.0	4.317834	5.445677	80	86.1051	265.3809	1.935029	2.423870
36	19,475.2	258,258.0	.289482	.412054	81	61.4905	179.2758	.788808	.253522
37	18,237.9	238,782.8	.260975	.378003	82	42.7273	117.7853	.630705	.071091
38	17,072.3	220,544.9	.232292	.343497	83	28.8014	75.0580	.459413	1.875397
39	15,973.9	203,472.6	.203402	.308506	84	18.7847	46.2566	.273804	.665174
40	14,938.0	187,498.7	4.174293	5.272998	85	11.8096	27.4719	1.072237	1.438889
41	13,961.6	172,560.7	.144936	.236942	86	7.13301	15.66231	0.853273	.194856
42	13,041.5	158,599.1	.115326	.200301	87	4.12417	8.52930	0.615336	0.930913
43	12,173.3	145,557.6	.085409	.163035	88	2.26937	4.40513	.355905	.643959
44	11,354.9	133,384.3	.055182	.125104	89	1.18497	2.13576	.073707	.329552
45	10,582.7	122,029.4	4.024595	5.086464	90	.564739	.950788	$\overline{1}$.751848	1.978084
46	9,854.15	111,446.70	3.993619	.047067	91	.242772	.386049	.385199	.586642
47	9,166.80	101,592.55	.962218	.006858	92	.0951367	.1432769	2.978348	.156176
48	8,518.11	92,425.75	.930343	4.965793	93	.0337438	.0481402	.528194	2.682508
49	7,905.89	83,907.64	.897951	.923801	94	.0106253	.0143964	.026341	.158254
50	7,328.11	76,001.75	3.864992	4.880824	95	.0029241	.0037711	3.465988	3.576466
51	6,782.71	68,673.64	.831403	.836790	96	.0006962	.0008470	4.842738	4.927886
52	6,267.95	61,890.93	.797125	.791627	97	.0001291	.0001508	.110773	.178401
53	5,782.16	55,622.98	.762090	.745254	98	.0000197	.0000217	5.293704	5.337379
54	5,323.86	49,840.82	.726227	.697585	99	.0000021	.0000021	6.318272	6.318272

TABLE LXXI.

COMMUTATION COLUMNS FOR TWO EQUAL AGES. MALE LIFE.

6 PER CENT.

Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}	Equal Ages.	D_{xx}	N_{xx}	λD_{xx}	λN_{xx}
10	100,000.0	1,405,298.1	5.000000	6.147768	55	3,193.08	27,382.81	3.504210	4.437478
11	93,121.3	1,305,298.1	4.969049	.115710	56	2,899.38	24,189.73	.462305	.383631
12	86,711.6	1,212,176.8	.938077	.083566	57	2,626.03	21,290.35	.419299	.328183
13	80,740.8	1,125,465.2	.907093	.051332	58	2,371.71	18,664.32	.375061	.271012
14	75,178.0	1,044,724.4	.876091	.019002	59	2,135.46	16,292.61	.329491	.211991
15	69,994.0	969,546.4	4.845061	5.986569	60	1,916.26	14,157.15	3.282455	4.150976
16	65,164.2	899,552.4	.814009	.954027	61	1,713.16	12,240.89	.233797	.087813
17	60,665.1	834,388.2	.782939	.921368	62	1,525.29	10,527.73	.183351	.022335
18	56,472.8	773,723.1	.751839	.888585	63	1,351.95	9,002.44	.130962	3.954360
19	52,566.6	717,250.3	.720710	.855671	64	1,192.37	7,650.49	.076412	.883689
20	48,927.2	664,683.7	4.689550	5.822615	65	1,045.91	6,458.12	3.019494	3.810106
21	45,535.5	615,756.5	.658350	.789409	66	911.927	5,412.212	2.959960	.733375
22	42,375.0	570,221.0	.627110	.756043	67	789.907	4,500.285	.897576	.653240
23	39,430.1	527,846.0	.595828	.722507	68	679.235	3,710.378	.832020	.569418
24	36,685.8	488,415.9	.564498	.688790	69	579.477	3,031.143	.763036	.481606
25	34,128.3	451,730.1	4.533114	5.654879	70	490.013	2,451.666	2.690208	3.389461
26	31,745.3	417,601.8	.501679	.620762	71	410.402	1,961.653	.613209	.292622
27	29,523.7	385,856.5	.470171	.586426	72	340.088	1,551.251	.531591	.190682
28	27,453.5	356,332.8	.438597	.551856	73	278.558	1,211.163	.444915	.083203
29	25,524.0	328,879.3	.406948	.517036	74	225.264	932.605	.352691	2.969698
30	23,724.9	303,355.3	4.375205	5.481952	75	179.594	707.341	2.254291	2.849629
31	22,048.2	279,630.4	.343373	.446584	76	140.985	527.747	.149173	.722426
32	20,485.1	257,582.2	.311439	.410916	77	108.813	386.762	.036681	.587444
33	19,028.1	237,097.1	.279395	.374926	78	82.4131	277.9488	1.915996	.443965
34	17,669.6	218,069.0	.247226	.338594	79	61.1449	195.5357	.786360	.291226
35	16,402.9	200,399.4	4.214920	5.301896	80	44.3476	134.3908	1.646870	2.128370
36	15,221.3	183,996.5	.182452	.264810	81	31.3713	90.0432	.496532	1.954451
37	14,119.8	168,775.2	.149828	.227309	82	21.5930	58.6719	.334312	.768430
38	13,092.7	154,655.4	.117028	.189365	83	14.4180	37.0789	.158904	.569127
39	12,134.5	141,562.7	.084022	.150949	84	9.314896	22.660866	0.969178	.355277
40	11,240.8	129,428.2	4.050796	5.112029	85	5.800895	13.345970	0.763495	1.125350
41	10,406.9	118,187.4	.017323	.072571	86	3.470683	7.545075	.540415	0.877664
42	9,629.35	107,780.51	3.983597	.032540	87	1.987747	4.074392	.298361	.610063
43	8,903.55	98,151.16	.949563	4.991895	88	1.083460	2.086645	.034813	.319448
44	8,226.57	89,247.61	.915219	.950597	89	.560401	1.003185	$\bar{1}.748499$	.001381
45	7,594.78	81,021.04	3.880515	4.908598	90	.264559	.442783	$\bar{1}.422523$	$\bar{1}.646191$
46	7,005.24	73,426.26	.845423	.865851	91	.112657	.178224	.051757	.250966
47	6,455.13	66,421.02	.809905	.822306	92	.043731	.065567	$\bar{2}.640789$	$\bar{2}.816685$
48	5,941.73	59,965.89	.773913	.777904	93	.015364	.021836	.186520	.339173
49	5,462.67	54,024.16	.737405	.732588	94	.004792	.006472	$\bar{3}.680550$	$\bar{3}.811038$
50	5,015.68	48,561.49	3.700330	4.686292	95	.001306	.001680	$\bar{3}.116080$	$\bar{3}.225309$
51	4,598.58	43,545.81	.662624	.638946	96	.000308	.000374	$\bar{4}.488714$	$\bar{4}.572872$
52	4,209.50	38,947.23	.624230	.590477	97	.000057	.000066	$\bar{5}.752632$	$\bar{5}.819544$
53	3,846.61	34,737.73	.585078	.540801	98	.0000085	.0000094	$\bar{6}.931446$	$\bar{6}.974733$
54	3,508.31	30,891.12	.545098	.489834	99	.0000009	.0000009	$\bar{7}.951898$	$\bar{7}.951898$

TABLE LXXII.

JOINT LIFE ANNUITIES. PRESENT VALUE (a_{xx}) OF 1, PAYABLE AT THE END OF EACH YEAR DURING THE JOINT CONTINUANCE OF TWO MALE LIVES.

Equal Ages.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.	Equal Ages.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.
10	20.237	18.610	17.1956	15.9583	14.870	13.053	55	9.358	9.014	8.6909	8.3869	8.101	7.576
11	20.117	18.514	17.1174	15.8946	14.818	13.017	56	9.014	8.693	8.3907	8.1058	7.837	7.343
12	19.992	18.413	17.0359	15.8279	14.763	12.979	57	8.671	8.372	8.0893	7.8230	7.571	7.107
13	19.863	18.309	16.9504	15.7579	14.705	12.939	58	8.329	8.051	7.7880	7.5392	7.304	6.870
14	19.729	18.200	16.8612	15.6844	14.644	12.897	59	7.988	7.730	7.4862	7.2548	7.035	6.630
15	19.591	18.086	16.7683	15.6076	14.581	12.852	60	7.650	7.411	7.1851	6.9703	6.766	6.388
16	19.447	17.969	16.6713	15.5272	14.514	12.804	61	7.315	7.095	6.8853	6.6863	6.497	6.145
17	19.298	17.846	16.5698	15.4427	14.443	12.754	62	6.983	6.780	6.5874	6.4036	6.228	5.902
18	19.144	17.719	16.4640	15.3543	14.369	12.701	63	6.656	6.469	6.2918	6.1224	5.961	5.659
19	18.985	17.587	16.3537	15.2620	14.291	12.645	64	6.333	6.162	5.9992	5.8435	5.695	5.416
20	18.820	17.449	16.2387	15.1652	14.209	12.585	65	6.016	5.859	5.7103	5.5675	5.431	5.175
21	18.649	17.307	16.1190	15.0641	14.123	12.523	66	5.704	5.562	5.4257	5.2952	5.170	4.935
22	18.473	17.159	15.9944	14.9586	14.033	12.457	67	5.399	5.270	5.1456	5.0266	4.912	4.697
23	18.291	17.005	15.8647	14.8483	13.939	12.387	68	5.101	4.984	4.8711	4.7629	4.659	4.463
24	18.102	16.846	15.7297	14.7332	13.841	12.314	69	4.810	4.704	4.6019	4.5039	4.409	4.231
25	17.908	16.682	15.5894	14.6132	13.737	12.236	70	4.527	4.431	4.3394	4.2508	4.165	4.003
26	17.708	16.511	15.4435	14.4878	13.629	12.155	71	4.252	4.166	4.0835	4.0036	3.926	3.780
27	17.501	16.335	15.2922	14.3579	13.517	12.069	72	3.986	3.909	3.8348	3.7629	3.693	3.561
28	17.288	16.152	15.1351	14.2218	13.399	11.980	73	3.729	3.660	3.5935	3.5291	3.467	3.348
29	17.069	15.963	14.9721	14.0803	13.276	11.885	74	3.480	3.419	3.3598	3.3023	3.247	3.140
30	16.844	15.769	14.8035	13.9337	13.148	11.786	75	3.242	3.187	3.1346	3.0834	3.034	2.939
31	16.612	15.568	14.6287	13.7812	13.014	11.683	76	3.013	2.965	2.9177	2.8722	2.828	2.743
32	16.373	15.360	14.4479	13.6228	12.875	11.574	77	2.793	2.750	2.7091	2.6688	2.630	2.554
33	16.128	15.147	14.2607	13.4584	12.730	11.460	78	2.583	2.546	2.5094	2.4739	2.439	2.373
34	15.876	14.927	14.0674	13.2881	12.579	11.342	79	2.383	2.350	2.3184	2.2872	2.257	2.198
35	15.618	14.700	13.8678	13.1117	12.423	11.217	80	2.193	2.164	2.1362	2.1088	2.082	2.030
36	15.354	14.467	13.6623	12.9295	12.261	11.088	81	2.012	1.987	1.9629	1.9389	1.916	1.870
37	15.084	14.228	13.4503	12.7410	12.093	10.953	82	1.841	1.819	1.7979	1.7771	1.757	1.717
38	14.807	13.983	13.2318	12.5461	11.918	10.812	83	1.679	1.660	1.6419	1.6238	1.606	1.572
39	14.524	13.731	13.0072	12.3451	11.738	10.666	84	1.526	1.509	1.4934	1.4778	1.462	1.433
40	14.235	13.473	12.7765	12.1381	11.552	10.514	85	1.380	1.366	1.3528	1.3394	1.326	1.301
41	13.940	13.209	12.5401	11.9251	11.360	10.357	86	1.242	1.230	1.2183	1.2069	1.196	1.174
42	13.639	12.939	12.2967	11.7057	11.161	10.193	87	1.107	1.097	1.0871	1.0775	1.068	1.050
43	13.334	12.664	12.0482	11.4808	10.957	10.024	88	.973	.965	.9568	.9489	.941	.926
44	13.023	12.383	11.7936	11.2497	10.747	9.849	89	.828	.821	.8150	.8086	.802	.790
45	12.707	12.097	11.5336	11.0131	10.531	9.668	90	.704	.699	.6938	.6887	.684	.674
46	12.386	11.805	11.2684	10.7710	10.310	9.482	91	.607	.603	.5985	.5943	.590	.582
47	12.061	11.509	10.9979	10.5235	10.083	9.290	92	.520	.516	.5128	.5094	.506	.499
48	11.733	11.209	10.7227	10.2710	9.851	9.092	93	.438	.435	.4322	.4294	.427	.421
49	11.400	10.904	10.4430	10.0137	9.613	8.890	94	.364	.361	.3593	.3571	.355	.350
50	11.065	10.596	10.1591	9.7518	9.371	8.682	95	.296	.295	.2930	.2913	.290	.286
51	10.727	10.284	9.8715	9.4857	9.125	8.469	96	.221	.220	.2190	.2178	.217	.214
52	10.387	9.970	9.5805	9.2159	8.874	8.252	97	.172	.171	.1703	.1694	.169	.167
53	10.045	9.653	9.2864	8.9426	8.620	8.031	98	.107	.108	.1069	.1063	.106	.105
54	9.702	9.334	8.9898	8.6661	8.362	7.805	99		.001	.0000	.0000	.000	.000

$$\text{FORMULA, } a_{xx} = \frac{N_{x+1.\,x+1}}{D_{xx}}.$$

TABLE LXXIII.

ANNUAL PREMIUM (π) FOR THE INSURANCE OF 1,000 ON TWO JOINT LIVES MALE,
PAYABLE AT THE END OF THE YEAR OF THE FIRST DEATH.

Equal Ages.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.	Equal Ages.	3 Per Ct.	3½ Per Ct.	4 Per Ct.	4½ Per Ct.	5 Per Ct.	6 Per Ct.
10	17.97	17.18	16.49	15.91	15.39	14.55	55	67.42	66.04	64.73	63.47	62.26	60.01
11	18.23	17.43	16.74	16.12	15.60	14.73	56	70.73	69.35	68.02	66.75	65.54	63.26
12	18.52	17.69	16.98	16.37	15.82	14.93	57	74.28	72.89	71.56	70.28	69.05	66.74
13	18.80	17.98	17.25	16.61	16.06	15.13	58	77.97	76.67	75.33	74.04	72.80	70.47
14	19.11	18.27	17.53	16.87	16.30	15.36	59	82.14	80.73	79.37	78.08	76.83	74.47
15	19.44	18.58	17.82	17.15	16.57	15.59	60	86.48	85.07	83.71	82.41	81.14	78.75
16	19.78	18.90	18.13	17.44	16.84	15.84	61	91.14	89.72	88.36	87.04	85.76	83.36
17	20.14	19.25	18.45	17.76	17.14	16.10	62	96.13	94.71	93.33	92.01	90.63	88.28
18	20.52	19.61	18.80	18.08	17.45	16.39	63	101.50	100.06	98.68	97.34	96.04	93.58
19	20.91	19.99	19.17	18.43	17.78	16.69	64	107.25	105.81	104.42	103.06	101.75	99.25
20	21.33	20.39	19.55	18.80	18.13	17.00	65	113.42	111.97	110.56	109.20	107.88	105.36
21	21.77	20.81	19.95	19.19	18.51	17.35	66	120.05	118.58	117.16	115.79	114.46	111.88
22	22.23	21.26	20.38	19.60	18.90	17.71	67	127.15	125.69	124.25	122.87	121.52	118.92
23	22.71	21.72	20.84	20.04	19.32	18.10	68	134.80	133.31	131.87	130.46	129.09	126.46
24	23.22	22.22	21.31	20.50	19.77	18.51	69	143.01	141.51	140.05	138.63	137.25	134.57
25	23.76	22.74	21.82	20.99	20.23	18.95	70	151.81	150.30	148.82	147.38	145.98	143.27
26	24.33	23.29	22.36	21.51	20.73	19.41	71	161.28	159.75	158.25	156.79	155.37	152.61
27	24.93	23.87	22.92	22.05	21.27	19.91	72	171.45	169.89	168.38	166.89	165.43	162.63
28	25.56	24.49	23.51	22.63	21.84	20.44	73	182.35	180.78	179.24	177.73	176.25	173.38
29	26.21	25.14	24.15	23.25	22.43	21.01	74	194.08	192.48	190.91	189.38	187.86	184.94
30	26.92	25.82	24.82	23.90	23.06	21.60	75	206.63	205.00	203.40	201.83	200.29	197.31
31	27.66	26.54	25.53	24.59	23.74	22.24	76	220.09	218.42	216.79	215.19	213.61	210.55
32	28.44	27.31	26.27	25.33	24.46	22.93	77	234.52	232.82	231.15	229.51	227.89	224.75
33	29.26	28.12	27.07	26.10	25.21	23.65	78	249.94	248.20	246.49	244.80	243.14	239.90
34	30.13	28.98	27.91	26.93	26.02	24.42	79	266.44	264.65	262.89	261.16	259.44	256.10
35	31.05	29.88	28.80	27.80	26.88	25.25	80	284.06	282.21	280.39	278.61	276.84	273.39
36	32.02	30.84	29.74	28.73	27.79	26.12	81	302.84	300.93	299.05	297.20	295.37	291.80
37	33.05	31.85	30.74	29.71	28.76	27.06	82	322.87	320.89	318.94	317.03	315.14	311.42
38	34.14	32.93	31.80	30.76	29.79	28.05	83	344.13	342.08	340.06	338.07	336.11	332.24
39	35.30	34.07	32.93	31.87	30.88	29.12	84	366.84	364.70	362.61	360.52	358.47	354.46
40	36.51	35.28	34.13	33.05	32.05	30.25	85	391.00	388.77	386.57	384.40	382.27	378.05
41	37.81	36.56	35.39	34.31	33.29	31.45	86	416.96	414.62	412.33	410.06	407.81	403.40
42	39.18	37.92	36.75	35.65	34.61	32.74	87	445.53	443.09	440.67	438.28	435.91	431.26
43	40.64	39.37	38.18	37.06	36.01	34.11	88	477.71	475.14	472.57	470.04	467.55	462.62
44	42.19	40.91	39.70	38.57	37.51	35.58	89	517.93	515.21	512.50	509.85	507.20	502.02
45	43.83	42.54	41.32	40.18	39.10	37.14	90	557.64	554.77	551.93	549.12	546.35	540.89
46	45.58	44.28	43.05	41.89	40.80	38.80	91	593.09	590.08	587.11	584.17	581.24	575.51
47	47.44	46.12	44.88	43.72	42.61	40.58	92	628.84	625.68	622.55	619.45	616.39	610.37
48	49.41	48.09	46.84	45.66	44.55	42.48	93	666.42	663.10	659.77	656.55	653.32	647.03
49	51.52	50.19	48.93	47.74	46.61	44.51	94	704.16	700.67	697.23	693.81	690.43	683.88
50	53.76	52.43	51.15	49.95	48.79	46.69	95	742.21	738.53	734.92	731.33	727.78	721.03
51	56.15	54.80	53.52	52.31	51.14	49.00	96	789.56	785.66	781.89	778.09	774.34	767.24
52	58.70	57.34	56.06	54.83	53.65	51.48	97	824.12	819.89	816.03	812.10	808.19	800.62
53	61.41	60.05	58.75	57.51	56.33	54.13	98	873.91	868.65	865.01	860.83	856.70	848.53
54	64.32	62.95	61.64	60.40	59.20	56.97	99			961.54	956.94	952.38	943.40

FORMULA, $\pi_{xx} = 1000 \left\{ \dfrac{1}{1+a_{xx}} - (1-v) \right\} = 1000 \left\{ \dfrac{D_{xx}}{N_{xx}} - (1-v) \right\}.$

TABLE LXXIV.

SINGLE PREMIUM (A) OR RESERVE, FOR THE INSURANCE OF 1,000 ON TWO JOINT LIVES, PAYABLE AT THE END OF THE YEAR OF THE FIRST DEATH.

Equal Ages	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.	Equal Ages	3 Per Cent.	3½ Per Cent.	4 Per Cent.	4½ Per Cent.	5 Per Cent.
10	381.45	336.85	300.17	269.75	244.29	55	698.32	661.36	627.27	595.78	566.64
11	384.95	340.12	303.17	272.48	246.77	56	708.33	672.22	638.82	607.88	579.19
12	388.57	343.51	306.32	275.35	249.38	57	718.33	683.09	650.41	620.06	591.84
13	392.34	347.06	309.60	278.37	252.13	58	728.29	693.94	662.00	632.28	604.57
14	396.24	350.74	313.03	281.53	255.04	59	738.20	704.77	673.61	644.54	617.36
15	400.27	354.57	316.60	284.84	258.08	60	748.05	715.56	685.19	656.78	630.18
16	404.45	358.55	320.33	288.30	261.27	61	757.81	726.27	696.70	669.01	643.00
17	408.79	362.69	324.24	291.94	264.63	62	767.47	736.89	708.18	681.18	655.79
18	413.28	367.00	328.31	295.75	268.17	63	777.01	747.41	719.55	693.29	668.54
19	417.92	371.47	332.54	299.72	271.87	64	786.42	757.80	730.79	705.30	681.21
20	422.73	376.12	336.97	303.88	275.77	65	795.66	768.04	741.91	717.19	693.77
21	427.70	380.94	341.57	308.25	279.85	66	804.73	778.10	752.87	728.91	706.19
22	432.83	385.94	346.37	312.79	284.14	67	813.63	787.99	763.64	740.48	718.45
23	438.14	391.13	351.36	317.54	288.61	68	822.31	797.65	774.19	751.83	730.53
24	443.62	396.50	356.54	322.49	293.31	69	830.78	807.12	784.54	762.99	742.41
25	449.28	402.07	361.94	327.66	298.23	70	839.02	816.33	794.63	773.89	754.04
26	455.12	407.84	367.55	333.07	303.37	71	847.03	825.30	804.48	784.54	765.40
27	461.13	413.81	373.37	338.66	308.74	72	854.78	833.99	814.05	794.89	776.51
28	467.33	419.98	379.43	344.52	314.35	73	862.27	842.42	823.32	804.97	787.29
29	473.72	426.36	385.69	350.61	320.21	74	869.50	850.56	832.31	814.73	797.78
30	480.29	432.94	392.17	356.92	326.32	75	876.45	858.40	840.98	824.16	807.93
31	487.05	439.74	398.89	363.49	332.68	76	883.12	865.93	849.32	833.25	817.72
32	493.99	446.75	405.84	370.31	339.30	77	889.52	873.17	857.34	842.02	827.16
33	501.13	453.98	413.05	377.39	346.20	78	895.63	880.09	865.02	850.40	836.23
34	508.46	461.42	420.48	384.73	353.37	79	901.46	886.70	872.36	858.45	844.92
35	515.97	469.08	428.16	392.32	360.81	80	907.00	892.99	879.38	866.14	853.23
36	523.66	476.95	436.06	400.16	368.53	81	912.26	898.98	886.04	873.45	861.17
37	531.54	485.03	444.22	408.29	376.54	82	917.25	904.66	892.38	880.42	868.73
38	539.61	493.34	452.62	416.68	384.85	83	921.97	910.04	898.39	887.02	875.90
39	547.86	501.85	461.26	425.33	393.42	84	926.44	915.14	904.10	893.31	882.74
40	556.27	510.58	470.13	434.25	402.29	85	930.67	919.98	909.51	899.36	889.22
41	564.85	519.49	479.23	443.42	411.44	86	934.71	924.59	914.68	904.96	895.43
42	573.61	528.63	488.59	452.86	420.89	87	938.64	929.09	919.73	910.54	901.51
43	582.51	537.93	498.14	462.55	430.62	88	942.53	933.55	924.74	916.08	907.56
44	591.58	547.44	507.94	472.50	440.62	89	946.76	938.40	930.19	922.12	914.17
45	600.78	557.12	517.94	482.69	450.89	90	950.36	942.55	934.85	927.29	919.83
46	610.12	566.97	528.13	493.12	461.44	91	953.19	945.80	938.52	931.35	924.28
47	619.58	576.98	538.54	503.57	472.25	92	955.73	948.72	941.81	935.00	928.28
48	629.15	587.14	549.12	514.65	483.31	93	958.12	951.48	944.91	938.44	932.06
49	638.83	597.44	559.88	525.73	494.61	94	960.28	953.96	947.72	941.57	935.48
50	648.60	607.87	570.80	537.01	506.13	95	962.24	956.22	950.26	944.40	938.59
51	658.44	618.40	581.86	548.46	517.87	96	964.42	958.73	953.11	947.56	942.06
52	668.35	629.04	593.06	560.07	529.80	97	965.86	960.39	954.99	949.64	944.36
53	678.31	639.75	604.37	571.84	541.91	98	967.75	962.53	957.43	952.36	947.34
54	688.30	650.53	615.77	583.75	554.20	99		966.13	961.54	956.94	952.38

$$\text{Formula, } A_{xx} = 1000 \left\{ 1 - (1-v)(1 + a_{xx}) \right\} = 1000 \left\{ 1 - (1-v)\frac{N_{xx}}{D_{xx}} \right\}.$$

TABLE LXXV.

TEN PAYMENT PREMIUM (P) ON 1,000, WITH VALUATION FACTORS FOR THE SAME,
ALSO FOR ORDINARY JOINT POLICIES ON TWO MALE LIVES.
FOR THE LATTER POLICIES P′ IS 0.

4 PER CENT.

Equal Ages.	Ord'y Joint.	Ten Pay't Joint Life Policies.			Equal Ages.	Ord'y Joint.	Ten Pay't Joint Life Policies.		
	$\lambda P''$.	P.	$\lambda P'$.	$\lambda P''$.		$\lambda P''$.	P.	$\lambda P'$.	$\lambda P''$.
10	1.740034	37.562	7.583526	1.880948	50	1.952370	77.388	6.497778	2.063894
11	.741904	37.945	.561975	.883130	51	.963711	79.516	.452967	.071799
12	.743863	38.347	.540412	.885409	52	.975496	81.753	.406117	.079957
13	.745925	38.766	.518801	.887772	53	.987735	84.105	.357061	.088372
14	.748089	39.206	.497150	.890240	54	2.000444	86.584	.305615	.097068
15	1.750354	39.663	7.475422	1.892787	55	2.013635	89.206	6.251613	2.106081
16	.752732	40.142	.453635	.895442	56	.027301	91.975	.194806	.115399
17	.755233	40.646	.431800	.898218	57	.041468	94.911	.134988	.125066
18	.757855	41.171	.409867	.901091	58	.056112	98.023	.071871	.135084
19	.760607	41.718	.387814	.904064	59	.071289	101.34	.005232	.145512
20	1.763495	42.293	7.365674	1.907167	60	2.086978	104.88	5.934739	2.156372
21	.766521	42.891	.343382	.910371	61	.103184	108.66	.860049	.167676
22	.769694	43.516	.320956	.913695	62	.119907	112.71	.780822	.179470
23	.773022	44.169	.298355	.917141	63	.137168	117.06	.696641	.191790
24	.776512	44.849	.275557	.920700	64	.154951	121.74	.607041	.204667
25	1.780169	45.560	7.252567	1.924391	65	2.173261	126.79	5.511540	2.218145
26	.784006	46.303	.229347	.928214	66	.192083	132.25	.409582	.232263
27	.788020	47.076	.205861	.932157	67	.211436	138.16	.300568	.247044
28	.792228	47.885	.182120	.936245	68	.231282	144.55	.183770	.262479
29	.796638	48.726	.158035	.940455	69	.251664	151.51	.058521	.278689
30	1.801247	49.600	7.133591	1.944787	70	2.272505	159.05	4.923893	2.295592
31	.806077	50.513	.108792	.949266	71	.293840	167.27	.779012	.313301
32	.811131	51.463	.083556	.953878	72	.315626	176.21	.622795	.331774
33	.816426	52.457	.057905	.958653	73	.337860	185.93	.454064	.351006
34	.821962	53.489	.031737	.963554	74	.360535	196.53	.271559	.371052
35	1.827753	54.565	7.005041	1.968607	75	2.383562	208.03	4.073626	2.391802
36	.833797	55.681	6.977727	.973786	76	.406966	220.51	3.858577	.413252
37	.840123	56.847	.949802	.979132	77	.430737	234.06	.624217	.435400
38	.846740	58.062	.921192	.984633	78	.454770	248.69	.367287	.458111
39	.853649	59.327	.891826	.990288	79	.479070	264.49	.083312	.481373
40	1.860862	60.643	6.861641	1.996094	80	2.503593	281.49	2.762652	2.505084
41	.868378	62.013	.830568	2.002056	81	.528288	299.75	.402315	.529188
42	.876257	63.446	.798584	.008206	82	.553163	319.37	.003219	.553679
43	.884450	64.933	.765527	.014498	83	.578092	340.30	1.561001	.578366
44	.893008	66.490	.731399	.020988	84	.603214	362.73	.068323	.603352
45	1.901923	68.111	6.696056	2.027645	85	2.628422	386.63	0.518142	2.628483
46	.911214	69.802	.659409	.034482	86	.653973	412.35	1.901420	.653995
47	.920895	71.573	.621388	.041529	87	.680453	440.67	.184758	.680454
48	.930971	73.422	.581854	.048766	88	.708447	472.57	2.377984	.708447
49	.941459	75.358	.540687	.056217	89	.741123	512.50	3.397848	.741121

FORMULA, $\quad P_{xx} = \dfrac{A_{xx} \cdot D_{xx}}{N_{xx} - N_{x+n, x+n}}. \qquad P'_{xx} = (P_{xx} - \pi_{xx}) N_{xx}. \qquad P''_{xx} = P_{xx} + 1000(1-v).$

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

NOTE. Ten or Limited Premium Policies are valued by this Table only till the end of the year after Payment of the last Premium, and afterwards by Single Premium Table.

4 PER CENT.

Equal Ages. $x+n$	$h=\frac{1}{2}$m. *Dec. $f''=963.141$ $\lambda b.$	$\lambda b'.$	$1\frac{1}{2}$m. Nov. 966.346 $\lambda b.$	$\lambda b'.$	$2\frac{1}{2}$m. Oct. 969.551 $\lambda b.$	$\lambda b'.$	$3\frac{1}{2}$m. 972.756 $\lambda b.$	Equal Ages. $x+n$
10	5̄.000969	1.236385	5̄.002901	1.238317	5̄.004824	1.240240	5̄.006739	10
11	.023650	.234408	.025584	.236342	.027508	.238266	.029424	11
12	.046350	.232335	.048284	.234269	.050209	.236194	.052127	12
13	.069062	.230153	.070998	.232089	.072925	.234016	.074843	13
14	.091793	.227862	.093731	.229800	.095660	.231729	.097582	14
15	5̄.114550	1.225462	5̄.116491	1.227403	5̄.118422	1.229334	5̄.120346	15
16	.137330	.222943	.139272	.224885	.141205	.226818	.143130	16
17	.160129	.220293	.162074	.222238	.164010	.224174	.165937	17
18	.182957	.217512	.184905	.219460	.186843	.221398	.188773	18
19	.205817	.214596	.207766	.216545	.209707	.218486	.211639	19
20	5̄.228706	1.211532	5̄.230659	1.213485	5̄.232604	1.215430	5̄.234540	20
21	.251635	.208321	.253591	.210277	.255539	.212225	.257479	21
22	.274604	.204952	.276564	.206912	.278515	.208863	.280459	22
23	.297615	.201416	.299580	.203381	.301536	.205337	.303482	23
24	.320675	.197708	.322644	.199677	.324605	.201638	.326556	24
25	5̄.343789	1.193821	5̄.345762	1.195794	5̄.347727	1.197759	5̄.349683	25
26	.366956	.189739	.368935	.191718	.370907	.193690	.372868	26
27	.390193	.185467	.392179	.187453	.394156	.189430	.396124	27
28	.413498	.180986	.415490	.182978	.417473	.184961	.419448	28
29	.436878	.176286	.438878	.178286	.440870	.180278	.442852	29
30	5̄.460353	1.171372	5̄.462361	1.173380	5̄.464360	1.175379	5̄.466350	30
31	.483916	.166219	.485933	.168236	.487941	.170244	.489939	31
32	.507583	.160820	.509610	.162847	.511627	.164864	.513635	32
33	.531360	.155164	.533397	.157201	.535425	.159229	.537444	33
34	.555263	.149242	.557313	.151292	.559352	.153331	.561383	34
35	5̄.579303	1.143043	5̄.581367	1.145107	5̄.583422	1.147162	5̄.585466	35
36	.603506	.136568	.605583	.138645	.607650	.140712	.609708	36
37	.627865	.129783	.629958	.131876	.632040	.133958	.634113	37
38	.652401	.122677	.654512	.124788	.656613	.126889	.658703	38
39	.677144	.115253	.679274	.117383	.681394	.119503	.683502	39
40	5̄.702109	1.107501	5̄.704260	1.109652	5̄.706401	1.111793	5̄.708531	40
41	.727321	.099381	.729495	.101555	.731657	.103717	.733809	41
42	.752788	.090893	.754988	.093093	.757178	.095283	.759356	42
43	.778564	.082040	.780791	.084267	.783008	.086484	.785212	43
44	.804650	.072780	.806909	.075039	.809157	.077287	.811393	44
45	5̄.831099	1.063118	5̄.833392	1.065411	5̄.835673	1.067692	5̄.837942	45
46	.857937	.053030	.860268	.055361	.862586	.057679	.864892	46
47	.885203	.042501	.887575	.044873	.889934	.047232	.892281	47
48	.912945	.031519	.915363	.033937	.917767	.036341	.920158	48
49	.941206	.020066	.943674	.022534	.946127	.024987	.948567	49
50	5̄.970037	1.008123	5̄.972560	1.010646	5̄.975069	1.013155	5̄.977563	50
51	.999501	0.995680	4̄.002085	0.998264	4̄.004653	.000832	4̄.007207	51
52	4̄.029657	.982718	.032307	.985368	.034942	0.988003	.037561	52
53	.060573	.969218	.063297	.971942	.066003	.974648	.068693	53

FORMULA, $\quad V = f'' + P'_x \cdot b_{x+n} - P''_x \cdot b'_{x+n};\qquad P'_x = (P_x - \pi_x)\, N_x.$

The suffix is not here repeated for equal Ages, Page 270. $\qquad P''_x = P_x + 1000\,(1-v).$

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages.	*Sept.	4½m. Aug. 975.962		5½m. July. 979.167		6m. 980.769		Equal Ages.
$x+n$	$\lambda b'$	λb	$\lambda b'$	λb	$\lambda b'$	λb	$\lambda b'$	$x+n$
10	1.242155	5̄.008645	1.244061	5̄.010542	1.245958	5̄.011488	1.246904	10
11	.240182	.031332	.242090	.033232	.243990	.034178	.244936	11
12	.238112	.054035	.240020	.055936	.241921	.056883	.242868	12
13	.235934	.076754	.237845	.078656	.239747	.079604	.240695	13
14	.233651	.099494	.235563	.101398	.237467	.102348	.238417	14
15	1.231258	5̄.122260	1.233172	5̄.124166	1.235078	5̄.125116	1.236028	15
16	.228743	.145046	.230659	.146954	.232567	.147905	.233518	16
17	.226101	.167855	.228019	.169766	.229930	.170718	.230882	17
18	.223328	.190694	.225249	.192607	.227162	.193560	.228115	18
19	.220418	.213563	.222342	.215479	.224258	.216433	.225212	19
20	1.217366	5̄.236467	1.219293	5̄.238384	1.221210	5̄.239341	1.222167	20
21	.214165	.259409	.216095	.261330	.218016	.262289	.218975	21
22	.210807	.282393	.212741	.284318	.214666	.285278	.215626	22
23	.207283	.305421	.209222	.307350	.211151	.308312	.212113	23
24	.203589	.328499	.205532	.330433	.207466	.331397	.208430	24
25	1.199715	5̄.351630	1.201662	5̄.353569	1.203601	5̄.354535	1.204567	25
26	.195651	.374822	.197605	.376766	.199549	.377735	.200518	26
27	.191398	.398082	.193356	.400032	.195306	.401004	.196278	27
28	.186936	.421412	.188900	.423369	.190857	.424344	.191832	28
29	.182260	.444825	.184233	.446790	.186198	.447769	.187177	29
30	1.177369	5̄.468331	1.179350	5̄.470302	1.181321	5̄.471285	1.182304	30
31	.172242	.491930	.174233	.493910	.176213	.494897	.177200	31
32	.166872	.515633	.168870	.517623	.170860	.518614	.171851	32
33	.161248	.539453	.163257	.541453	.165257	.542450	.166254	33
34	.155362	.563404	.157383	.565415	.159394	.566418	.160397	34
35	1.149206	5̄.587500	1.151240	5̄.589525	1.153265	5̄.590534	1.154274	35
36	.142770	.611756	.144818	.613795	.146857	.614810	.147872	36
37	.136031	.636176	.138094	.638229	.140147	.639252	.141170	37
38	.128979	.660783	.131059	.662853	.133129	.663885	.134161	38
39	.121611	.685601	.123710	.687690	.125799	.688731	.126840	39
40	1.113923	5̄.710651	1.116043	5̄.712762	1.118154	5̄.713813	1.119205	40
41	.105869	.735951	.108011	.738082	.110142	.739143	.111203	41
42	.097461	.761524	.099629	.763681	.101786	.764755	.102860	42
43	.088688	.787406	.090882	.789589	.093065	.790676	.094152	43
44	.079523	.813617	.081747	.815830	.083960	.816933	.085063	44
45	1.069961	5̄.840200	1.072219	5̄.842446	1.074465	5̄.843564	1.075583	45
46	.059985	.867186	.062279	.869467	.064560	.870604	.065697	46
47	.049579	.894615	.051913	.896937	.054235	.898093	.055391	47
48	.038732	.922536	.041110	.924901	.043475	.926079	.044653	48
49	.027427	.950993	.029853	.953406	.032266	.954607	.033467	49
50	1.015649	5̄.980043	1.018129	5̄.982508	1.020594	5̄.983736	1.021822	50
51	.003386	4̄.009745	.005924	4̄.012269	.008448	4̄.013525	.009704	51
52	0.990622	.040164	0.993225	.042751	0.995812	.044039	0.997100	52
53	.977338	.071367	.980012	.074024	.982669	.075347	.983992	53

* Months of Entry corresponding to Annual Valuation, Dec. 31.

Here $x+n+h =$ Present Age in years and fraction; $\qquad f'' = 1000\,\{h + (1-h)\,v\}$;

$$b_{x+n} = \frac{h + (1-h)\,vp_{x+n-1}}{D_{x+n}}; \qquad b'_{x+n} = b_{x+n} \cdot N_{x+n}.$$

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages. $x+n$.	$h=6\frac{1}{2}$m. June. $f''=982.372$.		$7\frac{1}{2}$m. May. 985.577.		$8\frac{1}{2}$m. April. 988.782.		$9\frac{1}{2}$m. 991.987.	Equal Ages. $x+n$.
	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	
10	5.012432	1.247848	5.014313	1.249729	5.016187	1.251603	5.018052	10
11	.035122	.245880	.037006	.247764	.038880	.249638	.040747	11
12	.057828	.243813	.059712	.245697	.061588	.247573	.063456	12
13	.080549	.241640	.082435	.243526	.084313	.245404	.086182	13
14	.103294	.239363	.105182	.241251	.107062	.243131	.108933	14
15	5.126063	1.236975	5.127954	1.238866	5.129835	1.240747	5.131708	15
16	.148853	.234466	.150744	.236357	.152628	.238241	.154502	16
17	.171667	.231831	.173561	.233725	.175446	.235610	.177323	17
18	.194511	.229066	.196407	.230962	.198295	.232850	.200175	18
19	.217386	.226165	.219284	.228063	.221174	.229953	.223056	19
20	5.240295	1.223121	5.242196	1.225022	5.244090	1.226916	5.245975	20
21	.263244	.219930	.265149	.221835	.267046	.223732	.268935	21
22	.286235	.216583	.288143	.218491	.290044	.220392	.291936	22
23	.309271	.213072	.311183	.214984	.313087	.216888	.314984	23
24	.332358	.209391	.334275	.211308	.336183	.213216	.338084	24
25	5.355499	1.205531	5.357420	1.207452	5.359333	1.209365	5.361238	25
26	.378702	.201485	.380629	.203412	.382548	.205331	.384458	26
27	.401974	.197248	.403906	.199180	.405830	.201104	.407746	27
28	.425316	.192804	.427255	.194743	.429185	.196673	.431107	28
29	.448745	.188153	.450691	.190099	.452630	.192038	.454559	29
30	5.472265	1.183284	5.474218	1.185237	5.476164	1.187183	5.478101	30
31	.495881	.178184	.497844	.180147	.499797	.182100	.501742	31
32	.519604	.172841	.521575	.174812	.523537	.176774	.525491	32
33	.543444	.167248	.545426	.169230	.547399	.171203	.549363	33
34	.567418	.161397	.569411	.163390	.571394	.165373	.573370	34
35	5.591541	1.155281	5.593548	1.157288	5.595544	1.159284	5.597533	35
36	.615823	.148885	.617843	.150905	.619853	.152915	.621853	36
37	.640273	.142191	.642306	.144224	.644330	.146248	.646346	37
38	.664913	.135189	.666965	.137241	.669006	.139282	.671037	38
39	.689769	.127878	.691839	.129948	.693898	.132007	.695947	39
40	5.714861	1.120253	5.716950	1.122342	5.719030	1.124422	5.721099	40
41	.740202	.112262	.742313	.114373	.744412	.116472	.746502	41
42	.765827	.103932	.767962	.106067	.770088	.108193	.772202	42
43	.791761	.095237	.793922	.097398	.796073	.099549	.798212	43
44	.818032	.086162	.820223	.088353	.822403	.090533	.824572	44
45	5.844680	1.076699	5.846903	1.078922	5.849114	1.081133	5.851314	45
46	.871736	.066829	.873994	.069087	.876241	.071334	.878476	46
47	.899246	.056544	.901543	.058841	.903828	.061126	.906100	47
48	.927253	.045827	.929593	.048167	.931919	.050493	.934234	48
49	.955805	.034665	.958192	.037052	.960565	.039425	.962925	49
50	5.984960	1.023046	5.987398	1.025484	5.989822	1.027908	5.992234	50
51	4.014778	.010957	4.017273	.013452	4.019753	.015932	4.022220	51
52	.045323	0.998384	.047881	.000942	.050422	.003483	.052950	52
53	.076665	.985310	.079291	0.987936	.081900	0.990545	.084494	53

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000,

4 PER CENT.

Equal Ages. $x+n$.	March. λb'.	10½m. Feb. 995.192. λb.	λb'.	11½m. Jan. 998.397. λb.	λb'.	12m. 1000.000. λb.	λb'.	Equal Ages. $x+n$.
10	1.253468	5.019909	1.255325	5.021759	1.257175	5.022680	1.258096	10
11	.251505	.042606	.253364	.044456	.255214	.045379	.256137	11
12	.249441	.065315	.251300	.067167	.253152	.068090	.254075	12
13	.247273	.088043	.249134	.089896	.250987	.090820	.251911	13
14	.245002	.110797	.246866	.112653	.248722	.113577	.249646	14
15	1.242620	5.133573	1.244485	5.135431	1.246343	5.136356	1.247268	15
16	.240115	.156368	.241981	.158228	.243841	.159154	.244767	16
17	.237487	.179192	.239356	.181054	.241218	.181981	.242145	17
18	.234730	.202046	.236601	.203910	.238465	.204838	.239393	18
19	.231835	.224930	.233709	.226796	.235575	.227726	.236505	19
20	1.228801	5.247853	1.230679	5.249722	1.232548	5.250653	1.233479	20
21	.225621	.270815	.227501	.272687	.229373	.273620	.230306	21
22	.222284	.293819	.224167	.295695	.226043	.296630	.226978	22
23	.218785	.316872	.220673	.318751	.222552	.319687	.223488	23
24	.215117	.339976	.217009	.341860	.218893	.342798	.219831	24
25	1.211270	5.363134	1.213166	5.365022	1.215054	5.365962	1.215994	25
26	.207241	.386360	.209143	.388253	.211036	.389197	.211980	26
27	.203020	.409653	.204927	.411552	.206826	.412498	.207772	27
28	.198595	.433020	.200508	.434925	.202413	.435874	.203362	28
29	.193967	.456479	.195887	.458392	.197800	.459345	.198753	29
30	1.189120	5.480028	1.191047	5.481948	1.192967	5.482904	1.193923	30
31	.184045	.503678	.185981	.505606	.187909	.506566	.188869	31
32	.178728	.527436	.180673	.529372	.182609	.530337	.183574	32
33	.173167	.551318	.175122	.553264	.177068	.554234	.178038	33
34	.167349	.575336	.169315	.577293	.171272	.578268	.172247	34
35	1.161273	5.599512	1.163252	5.601481	1.165221	5.602463	1.166203	35
36	.154915	.623845	.156907	.625828	.158890	.626815	.159877	36
37	.148264	.648351	.150269	.650347	.152265	.651342	.153260	37
38	.141313	.673060	.143336	.675072	.145348	.676075	.146351	38
39	.134056	.697987	.136096	.700018	.138127	.701029	.139138	39
40	1.126491	5.723159	1.128551	5.725209	1.130601	5.726230	1.131622	40
41	.118562	.748582	.120642	.750652	.122712	.751683	.123743	41
42	.110307	.774307	.112412	.776401	.114506	.777445	.115550	42
43	.101688	.800342	.103818	.802461	.105937	.803516	.106992	43
44	.092702	.826730	.094860	.828877	.097007	.829947	.098077	44
45	1.083333	5.853504	1.085523	5.855683	1.087702	5.856767	1.088786	45
46	.073569	.880698	.075791	.882910	.078003	.884012	.079105	46
47	.063398	.908362	.065660	.910611	.067909	.911731	.069029	47
48	.052808	.936537	.055111	.938827	.057401	.939967	.058541	48
49	.041785	.965272	.044132	.967608	.046468	.968770	.047630	49
50	1.030320	5.994631	1.032717	5.997016	1.035102	5.998203	1.036289	50
51	.018399	4.024672	.020851	4.027111	.023290	4.028325	.024504	51
52	.006011	.055463	.008524	.057960	.011021	.059204	.012265	52
53	0.993139	.087072	0.995717	.089635	0.998280	.090911	0.999556	53

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages. $x+n.$	$h=\tfrac12\mathrm{m}.$ *Dec. $f''=963.141$		$1\tfrac12\mathrm{m}.$ Nov. 966.346		$2\tfrac12\mathrm{m}.$ Oct. 969.551		$3\tfrac12\mathrm{m}.$ 972.756	Equal Ages. $x+n.$
	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	
54	$\overline{4}$.092320	0.955158	$\overline{4}$.095124	0.957962	$\overline{4}$.097911	0.960749	$\overline{4}$.100680	54
55	$\overline{4}$.124982	0.940521	$\overline{4}$.127877	0.943416	$\overline{4}$.130752	0.946291	$\overline{4}$.133609	55
56	.158664	.925303	.161656	.928295	.164628	.931267	.167580	56
57	.193453	.909482	.196555	.912584	.199635	.915664	.202694	57
58	.229479	.893034	.232700	.896255	.235898	.899453	.239072	58
59	.266842	.875945	.270196	.879299	.273523	.882626	.276824	59
60	$\overline{4}$.305679	0.858190	$\overline{4}$.309178	0.861689	$\overline{4}$.312648	0.865159	$\overline{4}$.316091	60
61	.346147	.839762	.349806	.843421	.353435	.847050	.357035	61
62	.388409	.820646	.392245	.824482	.396046	.828283	.399815	62
63	.432626	.800802	.436657	.804833	.440651	.808827	.444610	63
64	.479013	.780234	.483260	.784481	.487467	.788688	.491633	64
65	$\overline{4}$.527780	0.758918	$\overline{4}$.532266	0.763404	$\overline{4}$.536708	0.767846	$\overline{4}$.541105	65
66	.579173	.736846	.583924	.741597	.588622	.746295	.593270	66
67	.633435	.713979	.638478	.719022	.643465	.724009	.648393	67
68	.690881	.690332	.696244	.695695	.701541	.700992	.706775	68
69	.751776	.665830	.757499	.671553	.763149	.677203	.768725	69
70	$\overline{4}$.816533	0.640525	$\overline{4}$.822651	0.646643	$\overline{4}$.828684	0.652676	$\overline{4}$.834634	70
71	.885485	.614346	.892043	.620904	.898503	.627364	.904869	71
72	.959079	.587302	.966124	.594347	.973056	.601279	.979879	72
73	$\overline{3}$.037759	.559356	$\overline{3}$.045342	.566939	$\overline{3}$.052795	.574392	$\overline{3}$.060123	73
74	.122022	.530465	.130211	.538654	.138250	.546693	.146141	74
75	$\overline{3}$.212493	0.500686	$\overline{3}$.221349	0.509542	$\overline{3}$.230029	0.518222	$\overline{3}$.238540	75
76	.309721	.469924	.319320	.479523	.328712	.488915	.337904	76
77	.414374	.438131	.424809	.448566	.435000	.458757	.444957	77
78	.527269	.405362	.538632	.416725	.549706	.427799	.560504	78
79	.649174	.371527	.661577	.383930	.673635	.395988	.685367	79
80	$\overline{3}$.781001	0.336594	$\overline{3}$.794569	0.350162	$\overline{3}$.807726	0.363319	$\overline{3}$.820496	80
81	.923750	.300520	.938622	.315392	.953001	.329771	.966919	81
82	$\overline{2}$.078479	.263185	$\overline{2}$.094829	.279535	$\overline{2}$.110586	.295292	$\overline{2}$.125791	82
83	.246487	.224618	.264482	.242613	.281761	.259892	.298379	83
84	.428946	.184457	.448823	.204334	.467831	.223342	.486042	84
85	$\overline{2}$.627494	0.142647	$\overline{2}$.649484	0.164637	$\overline{2}$.670414	0.185567	$\overline{2}$.690381	85
86	.843590	.098482	.867956	.122848	.891028	.145920	.912936	86
87	$\overline{1}$.078896	.050518	$\overline{1}$.106049	.077671	$\overline{1}$.131603	.103225	$\overline{1}$.155737	87
88	.335865	$\overline{1}$.996769	.366080	.026984	.394328	.055232	.420851	88
89	.617059	.930245	.652886	$\overline{1}$.966072	.685981	$\overline{1}$.999167	.716732	89
90	$\overline{1}$.938654	$\overline{1}$.864208	$\overline{1}$.981258	$\overline{1}$.906812	0.020053	$\overline{1}$.945607	0.055665	90
91	0.304967	.803897	0.354059	.852989	.398162	.897092	.438196	91
92	.712147	.741287	.768670	.797810	.818675	.847815	.863513	92
93	1.164049	.672794	1.230048	.738793	1.287328	.796073	1.337926	93
94	.669216	.600063	.746739	.677586	.812499	.743346	.869597	94
95	2.234475	$\overline{1}$.520627	2.325331	$\overline{1}$.611483	2.400428	$\overline{1}$.686580	2.464435	95
96	.872089	.412726	.988191	.528828	3.079712	.620349	3.155262	96
97	3.617270	.320785	3.754903	.458418	.859255	.562770	.943328	97
98	4.470370	.158523	4.651266	.339419	4.778587	.466740	4.876920	98

* Months of Entry corresponding to Annual Valuation Dec. 31.

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages. $x+n$	Sept. $\lambda b'$	4½m. Aug. 975.962 λb	$\lambda b'$	5½m. July. 979.167 λb	$\lambda b'$	6m. 980.769 λb	$\lambda b'$	Equal Ages. $x+n$
54	0.963518	$\overline{4}$.103431	0.966269	$\overline{4}$.106165	0.969003	$\overline{4}$.107525	0.970363	54
55	0.949148	$\overline{4}$.136447	0.951986	$\overline{4}$.139266	0.954805	$\overline{4}$.140669	0.956208	55
56	.934219	.170513	.937152	.173425	.940064	.174874	.941513	56
57	.918723	.205732	.921761	.208748	.924777	.210248	.926277	57
58	.902627	.242223	.905778	.245352	.908907	.246908	.910463	58
59	.885927	.280101	.889204	.283353	.892456	.284970	.894073	59
60	0.868602	$\overline{4}$.319507	0.872018	$\overline{4}$.322897	0.875408	$\overline{4}$.324582	0.877093	60
61	.850650	.360603	.854218	.364144	.857759	.365904	.859519	61
62	.832052	.403551	.835788	.407256	.839493	.409096	.841333	62
63	.812786	.448532	.816708	.436819	.804995	.454351	.822527	63
64	.792854	.495759	.796980	.499847	.801068	.501876	.803097	64
65	0.772243	$\overline{4}$.545457	0.776595	$\overline{4}$.549766	0.780904	$\overline{4}$.551904	0.783042	65
66	.750943	.597869	.755542	.602420	.760093	.604678	.762351	66
67	.728937	.653267	.733811	.658087	.738631	.660477	.741021	67
68	.706226	.711947	.711398	.717057	.716508	.719590	.719041	68
69	.682779	.774231	.688285	.779669	.693723	.782362	.696416	69
70	0.658626	$\overline{4}$.840504	0.664496	$\overline{4}$.846296	0.670288	4.849162	0.673154	70
71	.633730	.911143	.640004	.917328	.646189	.920387	.649248	71
72	.608102	.986597	.614820	.993212	.621435	.996482	.624705	72
73	.581720	$\overline{3}$.067329	.588926	$\overline{3}$.074417	.596014	3.077918	.599515	73
74	.554504	.153892	.562335	.161508	.569951	.165266	.573709	74
75	0.526733	$\overline{3}$.246886	0.535079	$\overline{3}$.255074	0.543267	3.259112	0.547305	75
76	.498107	.346906	.507109	.355726	.515929	.360069	.520272	76
77	.468714	.454690	.478447	.464210	.487967	.468894	.492651	77
78	.438597	.571041	.449134	.581328	.459421	.586381	.464474	78
79	.407720	.696791	.419144	.707922	.430275	.713382	.435735	79
80	0.376089	$\overline{3}$.832902	0.388495	$\overline{3}$.844963	0.400556	3.850870	0.406463	80
81	.343689	.980404	.357174	.993484	.370254	.999879	.376649	81
82	.310497	$\overline{2}$.140482	.325188	$\overline{2}$.154691	.339397	2.161626	.346332	82
83	.276510	.314384	.292515	.329820	.307951	.337337	.315468	83
84	.241553	.503518	.259029	.520320	.275831	.528483	.283994	84
85	0.205534	$\overline{2}$.709470	0.224623	$\overline{2}$.727757	0.242910	2.736619	0.251772	85
86	.167828	.933791	.188683	.953691	.208583	.963309	.218201	86
87	.127359	$\overline{1}$.178600	.150222	$\overline{1}$.200320	.171942	1.210785	.182407	87
88	.081755	.445846	.106750	.469481	.130385	.480833	.141737	88
89	.029918	.745449	.058635	.772384	.085570	.785250	.098436	89
90	$\overline{1}$.981219	0.088577	0.014131	0.119169	0.044723	0.133694	0.059248	90
91	.937126	.474848	$\overline{1}$.973778	.508647	.007577	.524609	.023539	91
92	.892653	.904153	.933293	.941312	$\overline{1}$.970452	.958764	$\overline{1}$.987904	92
93	.846671	1.383239	.891984	1.424268	.933013	1.443415	.952160	93
94	.800444	.920054	.850901	.965254	.896101	.986205	.917052	94
95	$\overline{1}$.750587	2.520208	$\overline{1}$.806360	2.569627	$\overline{1}$.855779	2.592377	$\overline{1}$.878529	95
96	.695899	3.219597	.760234	3.275620	.816257	3.301135	.841772	96
97	.646843	4.013736	.717251	4.074305	.777820	4.101691	.805206	97
98	.565073	.957048	.645201	5.024669	.712822	5.054902	.743055	98

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages. $x+n$.	$h = 6\frac{1}{2}$m. June. $f'' = 982.372$		$7\frac{1}{2}$m. May. 985.577		$8\frac{1}{2}$m. April. 988.782		$9\frac{1}{2}$m. 991.987	Equal Ages. $x+n$.
	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	$\lambda b'.$	$\lambda b.$	
54	$\bar{4}$.108881	0.971719	$\bar{4}$.111582	0.974420	$\bar{4}$.114264	0.977102	$\bar{4}$.116932	54
55	$\bar{4}$.142067	0.957606	$\bar{4}$.144851	0.960390	$\bar{4}$.147616	0.963155	$\bar{4}$.150365	55
56	.176318	.942957	.179191	.945830	.182047	.948686	.184883	56
57	.211743	.927772	.214718	.930747	.217673	.933702	.220608	57
58	.248458	.912013	.251543	.915098	.254605	.918160	.257646	58
59	.286581	.895684	.289786	.898889	.292967	.902070	.296123	59
60	$\bar{4}$.326260	0.878771	$\bar{4}$.329597	0.882108	$\bar{4}$.332909	0.885420	$\bar{4}$.336195	60
61	.367656	.861271	.371139	.864754	.374595	.868210	.378023	61
62	.410929	.843166	.414572	.846809	.418184	.850421	.421766	62
63	.456273	.824449	.460092	.828268	.463877	.832053	.467630	63
64	.503897	.805118	.507909	.809130	.511884	.813105	.515824	64
65	$\bar{4}$.554033	0.785171	$\bar{4}$.558258	0.789396	$\bar{4}$.562443	0.793581	$\bar{4}$.566588	65
66	.606924	.764597	.611381	.769054	.615793	.773466	.620160	66
67	.662853	.743397	.667568	.748112	.672232	.752776	.676847	67
68	.722108	.721559	.727101	.726552	.732038	.731489	.736918	68
69	.785038	.699092	.790342	.704396	.795583	.709637	.800760	69
70	$\bar{4}$.852011	0.676003	$\bar{4}$.857652	0.681644	$\bar{4}$.863221	0.687213	$\bar{4}$.868720	70
71	.923425	.652286	.929438	.658299	.935370	.664231	.941221	71
72	.999728	.627951	$\bar{3}$.006148	.634371	$\bar{3}$.012474	.640697	$\bar{3}$.018709	72
73	$\bar{3}$.081391	.602988	.088255	.609852	.095013	.616610	.101667	73
74	.168991	.577434	.176349	.584792	.183583	.592026	.190699	74
75	$\bar{3}$.263112	0.551305	$\bar{3}$.271004	0.559197	$\bar{3}$.278755	0.566948	$\bar{3}$.286369	75
76	.364369	.524572	.372845	.533048	.381157	.541360	.389315	76
77	.473527	.497284	.482647	.506404	.491580	.515337	.500334	77
78	.591376	.469469	.601198	.479291	.610802	.488895	.620199	78
79	.718776	.441129	.729363	.451716	.739700	.462053	.749795	79
80	$\bar{3}$.856698	0.412291	$\bar{3}$.868124	0.423717	$\bar{3}$.879257	0.434850	$\bar{3}$.890112	80
81	$\bar{2}$.006181	.382951	$\bar{2}$.018518	.395288	$\bar{2}$.030514	.407284	$\bar{2}$.042187	81
82	.168451	.353157	.181788	.366494	.194728	.379424	.207293	82
83	.344726	.322857	.359138	.337269	.373087	.351218	.386601	83
84	.536495	.292006	.552090	.307601	.567143	.322654	.581693	84
85	$\bar{2}$.745303	0.260456	$\bar{2}$.762168	0.277321	$\bar{2}$.778403	0.293556	$\bar{2}$.794053	85
86	.972718	.227610	.990948	.245840	1.008442	.263334	$\bar{1}$.025259	86
87	$\bar{1}$.221005	.192627	$\bar{1}$.240749	.212371	.259635	.231257	.277733	87
88	.491896	.152800	.513211	.174115	.533528	.194432	.552937	88
89	.797745	.110931	.821707	.134893	.844416	.157602	.865997	89
90	0.147748	0.073302	0.174561	0.100115	0.199815	0.125369	0.223681	90
91	.540005	.038935	.569250	.068180	.596649	.095579	.622422	91
92	.975541	.004681	1.007268	.036408	1.036834	.065974	1.064516	92
93	1.461753	$\bar{1}$.970498	.496258	.005003	.528222	.036967	.557995	93
94	2.006190	.937037	2.043598	$\bar{1}$.974445	2.078038	.008885	2.109946	94
95	2.613993	$\bar{1}$.900145	2.654244	$\bar{1}$.940396	2.691078	$\bar{1}$.977230	2.725031	95
96	3.325234	.865871	3.369758	.910395	3.410138	.950775	3.447080	96
97	4.127452	.830967	4.174798	.878313	4.217486	.921001	4.256352	97
98	5.083166	.771319	5.134712	.822865	5.180783	.868936	5.222432	98

TABLE LXXVI.

GENERAL VALUATION OF JOINT LIFE POLICIES BY ANNUAL PREMIUM ON 1,000.

4 PER CENT.

Equal Ages	March.	10½m. Feb.		11½m. Jan.		12m.		Equal Ages
		995.192		998.397		1000.000		
$x+n$	$\lambda b'$.	λb.	$\lambda b'$.	λb.	$\lambda b'$.	λb.	$\lambda b'$.	$x+n$
54	0.979770	$\overline{4}.119582$	0.982420	$\overline{4}.122216$	0.985054	$\overline{4}.123527$	0.986365	54
55	0.965904	$\overline{4}.153096$	0.968635	$\overline{4}.155809$	0.971348	$\overline{4}.157160$	0.972699	55
56	.951522	.187700	.954339	.190500	.957139	.191893	.958532	56
57	.936637	.223523	.939552	.226418	.942447	.227859	.943888	57
58	.921201	.260666	.924221	.263665	.927220	.265156	.928711	58
59	.905226	.299259	.908362	.302371	.911474	.303919	.913022	59
60	0.888706	$\overline{4}.339457$	0.891968	$\overline{4}.342695$	0.895206	$\overline{4}.344305$	0.896816	60
61	.871638	.381425	.875040	.384800	.878415	.386478	.880093	61
62	.854003	.425319	.857556	.428844	.861081	.430595	.862832	62
63	.835806	.471351	.839527	.475040	.843216	.476873	.845049	63
64	.817045	.519727	.820948	.523596	.824817	.525518	.826739	64
65	0.797726	$\overline{4}.570693$	0.801831	$\overline{4}.574760$	0.805898	$\overline{4}.576779$	0.807917	65
66	.777833	.624484	.782157	.628766	.786439	.630891	.788564	66
67	.757391	.681414	.761958	.685933	.766477	.688174	.768718	67
68	.736369	.741744	.741195	.746518	.745969	.748885	.748336	68
69	.714814	.805878	.719932	.810935	.724989	.813441	.727495	69
70	0.692712	$\overline{4}.874149$	0.698141	$\overline{4}.879511$	0.703503	$\overline{4}.882168$	0.706160	70
71	.670082	.946994	.675855	.952692	.681553	.955513	.684374	71
72	.646932	$\overline{3}.024857$	.653080	$\overline{3}.030918$	.659141	$\overline{3}.033917$	.662140	72
73	.623264	.108221	.629818	.114676	.636273	.117868	.639465	73
74	.599142	.197701	.606144	.204590	.613033	.207995	.616438	74
75	0.574562	$\overline{3}.293853$	0.582046	$\overline{3}.301209$	0.589402	$\overline{3}.304841$	0.593034	75
76	.549518	.397321	.557524	.405183	.565386	.409060	.569263	76
77	.524091	.508913	.532670	.517327	.541084	.521473	.545230	77
78	.498292	.629396	.507489	.638403	.516496	.642837	.520930	78
79	.472148	.759662	.482015	.769310	.491663	.774054	.496407	79
80	0.445705	$\overline{3}.900703$	0.456296	$\overline{3}.911041$	0.466634	$\overline{3}.916119$	0.471712	80
81	.418957	$\overline{2}.053555$	.430325	$\overline{2}.064633$	.441403	$\overline{2}.070067$	.446837	81
82	.391999	.219505	.404211	.231383	.416089	.237202	.421908	82
83	.364732	.399708	.377839	.412431	.390562	.418655	.396786	83
84	.337204	.595771	.351282	.609406	.364917	.616067	.371578	84
85	0.309206	$\overline{2}.809158$	0.324311	$\overline{2}.823756$	0.338909	$\overline{2}.830874$	0.346027	85
86	.280151	$\overline{1}.041449$	.296341	$\overline{1}.057056$	.311948	$\overline{1}.064655$	.319547	86
87	.249355	.295107	.266729	.311813	.283435	.319931	.291553	87
88	.213841	.571515	.232419	.589332	.250236	.597973	.258877	88
89	.179183	.886555	.199741	.906184	.219370	.915675	.228861	89
90	0.149235	0.246303	0.171857	0.267805	0.193359	0.278169	0.203723	90
91	.121352	.646751	.145681	.669788	.168718	.680864	.179794	91
92	.093656	1.090538	.119678	1.115089	.144229	1.126862	.156002	92
93	.066740	.585856	.094601	.612038	.120783	.624559	.133304	93
94	.040793	2.139669	.070516	2.167488	.098335	2.180756	.111603	94
95	0.011183	2.756522	0.042674	2.785883	0.072035	2.799850	0.086002	95
96	$\overline{1}.987717$	3.481126	.021763	3.512695	.053332	3.527659	.068296	96
97	.959867	4.292022	$\overline{1}.995537$	4.324985	.028500	4.340573	.044088	97
98	.910585	5.260434	.948587	5.295377	$\overline{1}.983530$	5.311848	.000001	98

TABLE LXXVII.

FEMALE LIFE TABLE. FROM THIRTY OFFICES' EXPERIENCE OF LOSSES AND AMOUNTS INSURED.

AGE. $x.$	Living. $l_x.$	Decrement. $d_x.$	Expectation of Life.	Prob. of Dec. $q_x = \dfrac{d_x}{l_x}.$	Prob. Living. $p_x = \dfrac{l_{x+1}}{l_x}.$	$\lambda p_x.$	$\lambda l_x.$	AGE. $x.$
10	100,000	314	48.05	0.003140	0.996860	$\bar{1}$.998634	5.000000	10
11	99,686	420	47.21	.004212	.995788	.998167	4.998634	11
12	99,266	510	46.40	.005140	.994860	.997762	4.996801	12
13	98,756	581	45.64	.005882	.994118	.997438	4.994563	13
14	98,175	631	44.91	.006426	.993574	.997200	4.992001	14
15	97,544	644	44.19	0.006603	0.993397	$\bar{1}$.997123	4.989201	15
16	96,900	678	43.48	.006998	.993002	.996950	4.986324	16
17	96,222	745	42.79	.007741	.992259	.996625	4.983274	17
18	95,477	792	42.12	.008296	.991704	.996382	4.979899	18
19	94,685	820	41.46	.008659	.991341	.996223	4.976281	19
20	93,865	856	40.82	0.009120	0.990880	$\bar{1}$.996021	4.972504	20
21	93,009	847	40.19	.009106	.990894	.996027	4.968525	21
22	92,162	943	39.56	.010233	.989767	.995533	4.964552	22
23	91,219	992	38.96	.010873	.989127	.995252	4.960085	23
24	90,227	990	38.38	.010973	.989027	.995208	4.955337	24
25	89,237	1,006	37.80	0.011274	0.988726	$\bar{1}$.995076	4.950545	25
26	88,231	1,024	37.23	.011606	.988394	.994930	4.945621	26
27	87,207	998	36.66	.011442	.988558	.995002	4.940551	27
28	86,209	977	36.08	.011333	.988667	.995050	4.935553	28
29	85,232	975	35.49	.011440	.988560	.995003	4.930603	29
30	84,257	971	34.89	0.011524	0.988476	$\bar{1}$.994966	4.925606	30
31	83,286	966	34.29	.011599	.988401	.994933	4.920572	31
32	82,320	916	33.69	.011126	.988874	.995141	4.915505	32
33	81,404	869	33.06	.010675	.989325	.995339	4.910646	33
34	80,535	903	32.42	.011212	.988788	.995103	4.905985	34
35	79,632	882	31.78	0.011076	0.988924	$\bar{1}$.995163	4.901088	35
36	78,750	877	31.13	.011137	.988863	.995136	4.896251	36
37	77,873	878	30.47	.011274	.988726	.995076	4.891387	37
38	76,995	887	29.81	.011522	.988478	.994967	4.886463	38
39	76,108	863	29.16	.011338	.988662	.995048	4.881430	39
40	75,245	885	28.48	0.011763	0.988237	$\bar{1}$.994861	4.876478	40
41	74,360	893	27.82	.012009	.987991	.994753	4.871339	41
42	73,467	821	27.15	.011174	.988826	.995120	4.866092	42
43	72,646	791	26.45	.010889	.989111	.995245	4.861212	43
44	71,855	805	25.74	.011203	.988797	.995107	4.856457	44
45	71,050	799	25.02	0.011244	0.988756	$\bar{1}$.995089	4.851564	45
46	70,251	792	24.30	.011274	.988726	.995076	4.846653	46
47	69,459	757	23.57	.010900	.989100	.995240	4.841729	47
48	68,702	766	22.83	.011149	.988851	.995131	4.836969	48
49	67,936	803	22.08	.011820	.988180	.994836	4.832100	49
50	67,133	821	21.33	0.012230	0.987770	$\bar{1}$.994656	4.826936	50
51	66,312	889	20.59	.013407	.986593	.994138	4.821592	51
52	65,423	955	19.87	.014597	.985403	.993614	4.815730	52
53	64,468	976	19.15	.015139	.984861	.993375	4.809344	53
54	63,492	1,009	18.44	.015891	.984109	.993043	4.802719	54

TABLE LXXVII.

FEMALE LIFE TABLE. FROM THIRTY OFFICES' EXPERIENCE OF LOSSES AND AMOUNTS INSURED.

AGE. x.	Living. l_x.	Decrement. d_x.	Expectation of Life.	Prob. of Dec. $q_x = \dfrac{d_x}{l_x}$.	Prob. Living. $p_x = \dfrac{l_{x+1}}{l_x}$.	λp_x.	λl_x.	AGE. x.
55	62,483	1,082	17.73	0.017318	0.982682	$\bar{1}$.992413	4.795762	55
56	61,401	1,138	17.03	.018532	.981468	.991876	4.788175	56
57	60,263	1,221	16.35	.020262	.979738	.991110	4.780051	57
58	59,042	1,302	15.67	.022051	.977949	.990316	4.771161	58
59	57,740	1,360	15.02	.023554	.976446	.989648	4.761477	59
60	56,380	1,429	14.37	0.025345	0.974655	$\bar{1}$.988851	4.751125	60
61	54,951	1,501	13.73	.027315	.972685	.987972	4.739976	61
62	53,450	1,617	13.10	.030254	.969746	.986658	4.727948	62
63	51,833	1,690	12.49	.032605	.967395	.985604	4.714606	63
64	50,143	1,771	11.90	.035318	.964682	.984384	4.700210	64
65	48,372	1,856	11.31	0.038370	0.961630	$\bar{1}$.983008	4.684594	65
66	46,516	1,940	10.74	.041705	.958295	.981499	4.667602	66
67	44,576	2,024	10.19	.045405	.954595	.979819	4.649101	67
68	42,552	2,107	9.65	.049515	.950485	.977945	4.628920	68
69	40,445	2,185	9.13	.054024	.945976	.975880	4.606865	69
70	38,260	2,257	8.62	0.058991	0.941009	$\bar{1}$.973594	4.582745	70
71	36,003	2,322	8.13	.064495	.935505	.971046	4.556339	71
72	33,681	2,376	7.65	.070544	.929456	.968229	4.527385	72
73	31,305	2,416	7.20	.077176	.922824	.965119	4.495614	73
74	28,889	2,442	6.76	.084532	.915468	.961643	4.460733	74
75	26,447	2,449	6.34	0.092599	0.907401	$\bar{1}$.957799	4.422376	75
76	23,998	2,435	5.93	.101467	.898533	.953534	4.380175	76
77	21,563	2,397	5.55	.111163	.888837	.948822	4.333709	77
78	19,166	2,335	5.18	.121829	.878171	.943579	4.282531	78
79	16,831	2,246	4.82	.133445	.866555	.937796	4.226110	79
80	14.585	2,133	4.49	0.146245	0.853755	$\bar{1}$.931333	4.163906	80
81	12,452	1,994	4.17	.160134	.839866	.924210	4.095239	81
82	10.458	1,833	3.88	.175273	.824727	.916310	4.019449	82
83	8,625	1,654	3.59	.191768	.808232	.907536	3.935759	83
84	6,971	1,462	3.33	.209725	.790275	.897778	3.843295	84
35	5,509	1,262	3.08	0.229081	0.770919	$\bar{1}$.887009	3.741073	85
86	4,247	1,062	2.84	.250059	.749941	.875027	3.628082	86
87	3,185	868	2.62	.272527	.727473	.861817	3.503109	87
88	2,317	687	2.42	.296503	.703497	.847262	3.364926	88
89	1,630	526	2.23	.322700	.677300	.830781	3.212188	89
90	1,104	387	2.05	0.350544	0.649456	$\bar{1}$.812550	3.042969	90
91	717	272	1.89	.379358	.620642	.792841	2.855519	91
92	445	183	1.73	.411236	.588764	.769941	2.648360	92
93	262	116	1.59	.442747	.557253	.746052	2.418301	93
94	146	70	1.46	.479452	.520548	.716461	2.164353	94
95	76	39	1.34	0.513158	0.486842	$\bar{1}$.687388	1.880814	95
96	37	20	1.23	.540541	.459459	.662247	1.568202	96
97	17	10	1.09	.588235	.411765	.614649	1.230449	97
98	7	4	.93	.571429	.428571	.632023	0.845098	98
99	3	3	.50	1.000000	.000000	$-\infty$	0.477121	99

TABLE LXXVIII.

FEMALE LIFE. D, N, a_x, AND CORRECTION OF AGE.

EXAMPLE. An actual Age, 32 years 3 months, added to its Correction, gives 34 years, the equivalent Age at which the equal Life Annuity and Premium are found in the preceding tables for Male Life.

4 PER CENT.

AGE. x.	D_x.	λD_x.	N_x.	λN_x.	$\lambda N_x - \lambda D_x$.	Life An'y. a_x.	Correction (c).		AGE. x.
							Y.	M.	
10	67,556.5	4.829667	1,372,039.3	6.137366	1.307699	19.3095	5	0.6	10
11	64,754.1	.811267	1,304,482.8	.115438	.304171	19.1452	5	9.1	11
12	62,001.3	.792401	1,239,728.7	.093327	.300926	18.9952	6	2.7	12
13	59,310.3	.773130	1,177,727.4	.071045	.297915	18.8571	6	6.1	13
14	56,693.6	.753534	1,118,417.1	.048604	.295070	18.7274	6	7.9	14
15	54,162.8	4.733701	1,061,723.5	6.026012	1.292311	18.6025	6	8.6	15
16	51,735.8	.713791	1,007,560.7	.003271	.289480	18.4751	6	9.1	16
17	49,397.7	.693707	955,824.9	5.980378	.286671	18.3496	6	8.9	17
18	47,130.2	.673299	906,427.2	.957333	.284034	18.2324	6	7.5	18
19	44,941.5	.652648	859,297.0	.934144	.281496	18.1204	6	5.4	19
20	42,838.8	4.631837	814,355.5	5.910814	1.278977	18.0098	6	2.9	20
21	40,815.5	.610825	771,516.7	.887345	.276520	17.9025	5	11.8	21
22	38,888.3	.589819	730,701.2	.863740	.273921	17.7898	5	8.9	22
23	37,009.9	.568318	691,812.9	.839989	.271671	17.6927	5	4.5	23
24	35,199.5	.546537	654,803.0	.816111	.269574	17.6026	4	11.5	24
25	33,474.3	4.524712	619,603.5	5.792113	1.267401	17.5098	4	6.5	25
26	31,823.9	.502754	586,129.2	.767993	.265239	17.4179	4	1.3	26
27	30,244.8	.480651	554,305.3	.743749	.263098	17.3273	3	7.9	27
28	28,748.8	.458620	524,060.5	.719381	.260761	17.2289	3	2.9	28
29	27,329.6	.436633	495,311.7	.694879	.258246	17.1237	2	10.3	29
30	25,978.0	4.414606	467,982.1	5.670229	1.255623	17.0145	2	5.7	30
31	24,691.0	.392539	442,004.1	.645426	.252887	16.9014	2	1.3	31
32	23,465.9	.370438	417,313.1	.620462	.250024	16.7838	1	9.0	32
33	22,312.4	.348546	393,847.2	.595328	.246782	16.6515	1	5.5	33
34	21,225.2	.326852	371,534.8	.570000	.243148	16.5044	1	2.7	34
35	20,180.0	4.304921	350,309.6	5.544452	1.239531	16.3593	0	11.6	35
36	19,188.9	.283051	330,129.6	.518684	.235633	16.2041	0	8.8	36
37	18,245.4	.261153	310,940.7	.492678	.231525	16.0422	0	6.3	37
38	17,345.9	.239196	292,695.3	.466416	.227220	15.8741	0	3.8	38
39	16,486.6	.217130	275,349.4	.439884	.222754	15.7014	0	1.4	39
40	15,672.7	4.195144	258,862.8	5.413070	1.217926	15.5168	0	.0	40
41	14,892.7	.172972	243,190.1	.385946	.212974	15.3295	0	.0	41
42	14,147.9	.150692	228,297.4	.358501	.207809	15.1365	0	.0	42
43	13,451.7	.128778	214,149.5	.330717	.201939	14.9199	0	.0	43
44	12,793.5	.106990	200,697.8	.302542	.195552	14.6874	0	.0	44
45	12,163.7	4.085064	187,904.3	5.273937	1.188873	14.4480	0	.0	45
46	11,564.3	.063119	175,740.6	.244872	.181753	14.1968	0	.0	46
47	10,994.2	.041162	164,176.3	.215310	.174148	13.9330	0	.0	47
48	10,456.1	.019369	153,182.1	.185208	.165839	13.6500	0	.0	48
49	9,941.82	3.997466	142,725.97	.154503	.157037	13.3561	0	.0	49
50	9,446.46	3.975269	132,784.15	5.123146	1.147877	13.0565	0	.0	50
51	8,972.06	.952892	123,337.69	.091096	.138204	12.7469	0	.0	51
52	8,511.30	.929996	114,365.63	.058295	.128299	12.4369	0	.0	52
53	8,064.49	.906577	105,854.33	.024709	.118132	12.1260	0	.0	53
54	7,636.93	.882919	97,789.84	4.990293	.107374	11.8048	0	.0	54

FORMULA, $D_x = v^x l_x$; $\quad 1 + a_x = \dfrac{N_x}{D_x}$; $\quad$ Female $a_x = a_{x+c}$ Male Life.

TABLE LXXVIII.

FEMALE LIFE. D, N, a_x, AND CORRECTION OF AGE.

4 PER CENT.

AGE. x.	D_x.	λD_x.	N_x.	λN_x.	$\lambda N_x - \lambda D_x$.	Life An'y. a_x.	Correction (c). Y.	M.	AGE. x.
55	7,226.50	3.858928	90,152.91	4.954980	1.096052	11.4753	0	.0	55
56	6,828.23	.834308	82,926.41	.918693	.084385	11.1447	0	.0	56
57	6,443.93	.809151	76,098.18	.881374	.072223	10.8093	0	.8	57
58	6,070.54	.783227	69,654.25	.842948	.059721	10.4742	0	1.4	58
59	5,708.34	.756510	63,583.71	.803346	.046836	10.1387	0	1.9	59
60	5,359.51	3.729125	57,875.37	4.762494	1.033369	9.7986	0	2.5	60
61	5,022.76	.700942	52,515.86	.720291	.019349	9.4556 ·	0	3.1	61
62	4,697.65	.671881	47,493.10	.676631	.004750	9.1100	0	3.7	62
63	4,380.32	.641506	42,795.45	.631398	0.989892	8.76994	0	4.2	63
64	4,074.52	.610076	38,415.13	.584502	.974426	8.42814	0	4.7	64
65	3,779.44	3.577427	34,340.61	4.535808	0.958381	8.08617	0	5.2	65
66	3,494.64	.543402	30,561.17	.485170	.941768	7.74517	0	5.8	66
67	3,220.08	.507867	27,066.53	.432432	.924565	7.40553	0	6.3	67
68	2,955.65	.470653	23,846.45	.377424	.906771	7.06810	0	6.9	68
69	2,701.25	.431565	20,890.80	.319955	.888390	6.73375	0	7.5	69
70	2,457.03	3.390411	18,189.55	4.259822	0.869411	6.40306	0	8.1	70
71	2,223.17	.346972	15,732.52	.196799	.849827	6.07664	0	8.7	71
72	1,999.79	.300985	13,509.35	.130634	.829649	5.75537	0	9.3	72
73	1,787.23	.252180	11,509.56	.061059	.808879	5.43990	0	9.9	73
74	1,585.86	.200266	9,722.33	3.987770	.787504	5.13061	0	10.6	74
75	1,395.97	3.144876	8,136.47	3.910436	0.765560	4.82854	0	11.2	75
76	1,217.98	.085641	6,740.50	.828692	.743051	4.53415	0	11.8	76
77	1,052.31	.022142	5,522.52	.742138	.719996	4.24803	1	.5	77
78	899.355	2.953931	4,470.212	.650328	.696397	3.97047	1	1.1	78
79	759.410	.880476	3,570.857	.552773	.672297	3.70216	1	1.7	79
80	632.760	2.801239	2,811.447	3.448930	0.647691	3.44315	1	2.3	80
81	519.444	.715539	2,178.687	.338194	.622655	3.19426	1	2.8	81
82	419.484	.622715	1,659.243	.219910	.597195	2.95544	1	3.2	82
83	332.653	.521992	1,239.759	.093338	.571346	2.72689	1	3.4	83
84	258.520	.412495	907.106	2.957658	.545163	2.50884	1	3.5	84
85	196.444	2.293239	648.586	2.811968	0.518729	2.30163	1	3.1	85
86	145.618	.163215	452.142	.655275	.492060	2.10499	1	2.3	86
87	105.005	.021208	306.524	.486465	.465257	1.91915	1	.9	87
88	73.4501	1.865992	201.5189	.304316	.438324	1.74362	0	10.6	88
89	49.6845	.696221	128.0688	.107443	.411222	1.57764	0	8.8	89
90	32.3571	1.509969	78.3843	1.894229	0.384260	1.42248	0	7.7	90
91	20.2062	.305485	46.0272	.663015	.357530	1.27788	0	6.8	91
92	12.0585	.081293	25.8210	.411973	.330680	1.14131	0	5.7	92
93	6.82653	0.834200	13.76251	.138698	.304498	1.01604	0	4.1	93
94	3.65779	.563219	6.93598	0.841108	.277889	.89622	0	2.5	94
95	1.83083	0.262647	3.27819	0.515634	0.252987	.79055	0	.0	95
96	.857040	$\bar{1}$.933001	1.447356	.160576	.227575	.68879	0	.0	96
97	.378630	.578215	.590316	$\bar{1}$.771084	.192869	.55908	0	.0	97
98	.149910	.175831	.211686	.325692	.149861	.41209	0	.0	98
99	.061776	$\bar{2}$.790820	.061776	$\bar{2}$.790820	.000000	.00000	0	.0	99

TABLE LXXIX.

COMPARISON OF DIFFERENT LIFE TABLES.

AGE.	Carlisle.		17 Offices.	Am. 1858.	English Life Table, No. 3.				20 Offices. H^M.		AGE.
x.	l_x.	d_x.	l_x.	l_x.	Males, l_x.	d_x.	Fem. l_x.	d_x.	l_x.	d_x.	x.
0	10,000	1,539			511,745	83,719	488,255	65,774			0
1	8,461	682			428,026	27,521	422,481	26,159			1
2	7,779	505			400,505	14,215	396,322	14,023			2
3	7,274	276			386,290	9,213	382,299	9,243			3
4	6,998	201			377,077	6,719	373,056	6,596			4
5	6,797	121			370,358	5,033	366,460	4,866			5
6	6,676	82			365,325	3,953	361,594	3,815			6
7	6,594	58			361,372	3,310	357,779	3,249			7
8	6,536	43			358,062	2,734	354,530	2,724			8
9	6,493	33			355,328	2,297	351,806	2,328			9
10	6,460	29	100,000	100,000	353,031	1,983	349,478	2,045	100,000	490	10
11	6,431	31	99,324	99,251	351,048	1,776	347,433	1,861	99,510	397	11
12	6,400	32	98,650	98,505	349,272	1,666	345,572	1,765	99,113	329	12
13	6,368	33	97,978	97,762	347,606	1,637	343,807	1,745	98,784	288	13
14	6,335	35	97,307	97,022	345,969	1,679	342,062	1,789	98,496	272	14
15	6,300	39	96,636	96,285	344,290	1,781	340,273	1,888	98,224	282	15
16	6,261	42	95,965	95,550	342,509	1,928	338,385	2,029	97,942	318	16
17	6,219	43	95,293	94,818	340,581	2,112	336,356	2,205	97,624	379	17
18	6,176	43	94,620	94,089	338,469	2,320	334,151	2,400	97,245	466	18
19	6,133	43	93,945	93,362	336,149	2,541	331,751	2,609	96,779	556	19
20	6,090	43	93,268	92,637	333,608	2,764	329,142	2,819	96,223	609	20
21	6,047	42	92,588	91,914	330,844	2,801	326,323	2,867	95,614	643	21
22	6,005	42	91,905	91,192	328,043	2,836	323,456	2,912	94,971	650	22
23	5,963	42	91,219	90,471	325,207	2,868	320,544	2,952	94,321	638	23
24	5,921	42	90,529	89,751	322,339	2,897	317,592	2,989	93,683	622	24
25	5,879	43	89,835	89,032	319,442	2,926	314,603	3,024	93,061	617	25
26	5,836	43	89,137	88,314	316,516	2,954	311,579	3,055	92,444	618	26
27	5,793	45	88,434	87,596	313,562	2,981	308,524	3,084	91,826	634	27
28	5,748	50	87,726	86,878	310,581	3,009	305,440	3,112	91,192	654	28
29	5,698	56	87,012	86,160	307,572	3,038	302,328	3,138	90,538	673	29
30	5,642	57	86,292	85,441	304,534	3,068	299,190	3,163	89,865	694	30
31	5,585	57	85,565	84,721	301,466	3,100	296,027	3,187	89,171	706	31
32	5,528	56	84,831	84,000	298,366	3,134	292,840	3,209	88,465	717	32
33	5,472	55	84,089	83,277	295,232	3,171	289,631	3,233	87,748	727	33
34	5,417	55	83,339	82,551	292,061	3,211	286,398	3,255	87,021	740	34
35	5,362	55	82,581	81,822	288,850	3,254	283,143	3,279	86,281	757	35
36	5,307	56	81,814	81,090	285,596	3,300	279,864	3,301	85,524	779	36
37	5,251	57	81,038	80,353	282,296	3,352	276,563	3,326	84,745	802	37
38	5,194	58	80,253	79,611	278,944	3,406	273,237	3,350	83,943	821	38
39	5,136	61	79,458	78,862	275,538	3,465	269,887	3,376	83,122	838	39
40	5,075	66	78,653	78,106	272,073	3,529	266,511	3,402	82,284	848	40
41	5,009	69	77,838	77,341	268,544	3,596	263,109	3,431	81,436	854	41
42	4,940	71	77,012	76,567	264,948	3,668	259,678	3,459	80,582	865	42
43	4,869	71	76,173	75,782	261,280	3,746	256,219	3,490	79,717	887	43
44	4,798	71	75,316	74,985	257,534	3,826	252,729	3,522	78,830	911	44
45	4,727	70	74,435	74,173	253,708	3,912	249,207	3,555	77,919	950	45
46	4,657	69	73,526	73,345	249,796	4,001	245,652	3,591	76,969	996	46
47	4,588	67	72,582	72,497	245,795	4,095	242,061	3,627	75,973	1,041	47
48	4,521	63	71,601	71,627	241,700	4,192	238,434	3,665	74,932	1,082	48
49	4,458	61	70,580	70,731	237,508	4,292	234,769	3,705	73,850	1,124	49

TABLE LXXIX.

COMPARISON OF DIFFERENT LIFE TABLES.

AGE.	Carlisle.		17 Offices.	Am. 1858.	English Life Table, No. 3.				20 Offices. H^M.		AGE.
$x.$	$l_x.$	$d_x.$	$l_x.$	$l_x.$	Males, $l_x.$	$d_x.$	Fem. $l_x.$	$d_x.$	$l_x.$	$d_x.$	$x.$
50	4,397	59	69,517	69,804	233,216	4,395	231,064	3,746	72,726	1,160	50
51	4,338	62	68,409	68,842	228,821	4,626	227,318	3,788	71,566	1,193	51
52	4,276	65	67,253	67,841	224,195	4,758	223,530	3,832	70,373	1,235	52
53	4,211	68	66,046	66,797	219,437	4,885	219,698	3,876	69,138	1,286	53
54	4,143	70	64,785	65,706	214,552	5,013	215,822	4,246	67,852	1,339	54
55	4,073	73	63,469	64,563	209,539	5,144	211,576	4,439	66,513	1,399	55
56	4,000	76	62,094	63,364	204,395	5,281	207,137	4,628	65,114	1,462	56
57	3,924	82	60,658	62,104	199,114	5,428	202,509	4,817	63,652	1,527	57
58	3,842	93	59,161	60,779	193,686	5,584	197,692	5,009	62,125	1,592	58
59	3,749	106	57,600	59,385	188,102	5,752	192,683	5,206	60,533	1,667	59
60	3,643	122	55,973	57,917	182,350	5,929	187,477	5,409	58,866	1,747	60
61	3,521	126	54,275	56,371	176,421	6,118	182,068	5,619	57,119	1,830	61
62	3,395	127	52,505	54,743	170,303	6,314	176,449	5,835	55,289	1,915	62
63	3,268	125	50,661	53,030	163,989	6,515	170,614	6,057	53,374	2,001	63
64	3,143	125	48,744	51,230	157,474	6,720	164,557	6,282	51,373	2,076	64
65	3,018	124	46,754	49,341	150,754	6,921	158,275	6,509	49,297	2,141	65
66	2,894	123	44,693	47,361	143,833	7,115	151,766	6,731	47,156	2,196	66
67	2,771	123	42,565	45,291	136,718	7,297	145,035	6,947	44,960	2,243	67
68	2,648	123	40,374	43,133	129,421	7,458	138,088	7,149	42,717	2,274	68
69	2,525	124	38,128	40,890	121,963	7,593	130,939	7,332	40,443	2,319	69
70	2,401	124	35,837	38,569	114,370	7,695	123,607	7,489	38,124	2,371	70
71	2,277	134	33,510	36,178	106,675	7,756	116,118	7,613	35,753	2,433	71
72	2,143	146	31,159	33,730	98,919	7,770	108,505	7,698	33,320	2,497	72
73	1,997	156	28,797	31,243	91,149	7,733	100,807	7,736	30,823	2,554	73
74	1,841	166	26,439	28,738	83,416	7,639	93,071	7,724	28,269	2,578	74
75	1,675	160	24,100	26,237	75,777	7,483	85,347	7,653	25,691	2,527	75
76	1,515	156	21,797	23,761	68,294	7,268	77,694	7,521	23,164	2,464	76
77	1,359	146	19,548	21,330	61,026	6,990	70,173	7,329	20,700	2,374	77
78	1,213	132	17,369	18,961	54,036	6,655	62,844	7,071	18,326	2,258	78
79	1,081	128	15,277	16,670	47,381	6,266	55,773	6,755	16,068	2,138	79
80	953	116	13,290	14,474	41,115	5,832	49,018	6,382	13,930	2,015	80
81	837	112	11,424	12,383	35,283	5,361	42,636	5,959	11,915	1,883	81
82	725	102	9,694	10,419	29,922	4,862	36,677	5,496	10,032	1,719	82
83	623	94	8,112	8,603	25,060	4,349	31,181	5,003	8,313	1,545	83
84	529	84	6,685	6,955	20,711	3,834	26,178	4,490	6,768	1,346	84
85	445	78	5,417	5,485	16,877	3,328	21,688	3,972	5,422	1,138	85
86	367	71	4,306	4,193	13,549	2,840	17,716	3,458	4,284	941	86
87	296	64	3,348	3,079	10,709	2,384	14,258	2,962	3,343	773	87
88	232	51	2,537	2,146	8,325	1,965	11,296	2,494	2,570	615	88
89	181	39	1,864	1,402	6,360	1,590	8,802	2,063	1,955	495	89
90	142	37	1,319	847	4,770	1,260	6,739	1,673	1,460	408	90
91	105	30	892	462	3,510	979	5,066	1,331	1,052	329	91
92	75	21	570	216	2,531	744	3,735	1,037	723	254	92
93	54	14	339	79	1,787	553	2,698	790	469	195	93
94	40	10	184	21	1,234	401	1,908	588	274	139	94
95	30	7	89	3	833	285	1,320	428	135	86	95
96	23	5	37		548	196	892	304	49	40	96
97	18	4	13		352	132	588	210	9	9	97
98	14	3	4		220	86	378	142			98
99	11	2	1		134	55	236	92			99
100	9	2			79	33	144	59			100

BEYOND 100 YEARS: Carlisle, l_x, 7, 5, 3, 1. English, No. 3, Males l_x, 46, 25, 14, 7, 4, 2, 1. " " Females l_x, 85, 49, 27, 15, 8, 4, 2, 1.

TABLE LXXX.

EXPECTATION OF LIFE BY VARIOUS TABLES—YEARS AND DECIMALS.

AGE. x.	North-ampton.	Carlisle.	17 Offices.	Am. 1858.	English Life, No. 3.		20 Offices. H^M.		30 Am. Offices.		AGE. x.
					Males.	Females.	Males.	Females.	Males.	Females.	
0	25.18	38.72			39.91	41.85					0
1	32.74	44.68			46.65	47.31					1
2	37.79	47.55			48.83	49.40					2
3	39.55	49.82			49.61	50.20					3
4	40.58	50.76			49.81	50.43					4
5	40.84	51.25			49.71	50.33					5
6	41.07	51.17			49.39	50.00					6
7	41.03	50.80			48.92	49.53					7
8	40.79	50.24			48.37	48.98					8
9	40.36	49.57			47.74	48.35					9
10	39.78	48.82	48.36	48.72	47.05	47.67	50.29	48.20	49.99	48.05	10
11	39.14	48.04	47.68	48.08	46.31	46.95	49.54	47.35	49.32	47.21	11
12	38.49	47.27	47.01	47.45	45.54	46.20	48.73	46.54	48.64	46.40	12
13	37.83	46.51	46.33	46.80	44.76	45.44	47.89	45.78	47.95	45.64	13
14	37.17	45.75	45.64	46.16	43.97	44.66	47.03	45.05	47.26	44.91	14
15	36.51	45.00	44.96	45.50	43.18	43.90	46.16	44.34	46.57	44.19	15
16	35.85	44.27	44.27	44.85	42.40	43.14	45.29	43.64	45.88	43.48	16
17	35.20	43.57	43.58	44.19	41.64	42.40	44.44	42.95	45.18	42.79	17
18	34.58	42.87	42.88	43.53	40.90	41.67	43.61	42.25	44.48	42.12	18
19	33.99	42.17	42.19	42.87	40.17	40.97	42.82	41.54	43.78	41.46	19
20	33.43	41.46	41.49	42.20	39.48	40.29	42.06	40.82	43.07	40.82	20
21	32.90	40.75	40.79	41.53	38.80	39.63	41.33	40.09	42.36	40.19	21
22	32.39	40.04	40.09	40.85	38.13	38.98	40.60	39.39	41.65	39.56	22
23	31.88	39.31	39.39	40.17	37.46	38.33	39.88	38.70	40.93	38.96	23
24	31.36	38.59	38.68	39.49	36.79	37.68	39.15	38.04	40.21	38.38	24
25	30.85	37.86	37.98	38.81	36.12	37.04	38.41	37.41	39.49	37.80	25
26	30.33	37.14	37.27	38.12	35.44	36.39	37.66	36.81	38.77	37.23	26
27	29.82	36.41	36.56	37.43	34.77	35.75	36.91	36.23	38.04	36.66	27
28	29.30	35.69	35.86	36.73	34.10	35.10	36.16	35.66	37.31	36.08	28
29	28.79	35.00	35.15	36.03	33.43	34.46	35.42	35.09	36.58	35.49	29
30	28.27	34.34	34.43	35.33	32.76	33.81	34.68	34.50	35.85	34.89	30
31	27.76	33.68	33.72	34.63	32.09	33.17	33.95	33.91	35.12	34.29	31
·32	27.24	33.03	33.01	33.92	31.42	32.53	33.21	33.31	34.38	33.69	32
33	26.72	32.36	32.30	33.21	30.74	31.88	32.48	32.69	33.65	33.06	33
34	26.20	31.68	31.58	32.50	30.07	31.23	31.75	32.07	32.91	32.42	34
35	25.68	31.00	30.87	31.78	29.40	30.59	31.02	31.45	32.17	31.78	35
36	25.16	30.32	30.15	31.07	28.73	29.94	30.29	30.81	31.43	31.13	36
37	24.64	29.64	29.44	30.35	28.06	29.29	29.56	30.18	30.70	30.47	37
38	24.12	28.96	28.72	29.62	27.39	28.64	28.84	29.54	29.96	29.81	38
39	23.60	28.28	28.00	28.90	26.72	27.99	28.12	28.90	29.22	29.16	39
40	23.08	27.61	27.28	28.18	26.06	27.34	27.40	28.25	28.48	28.48	40
41	22.56	26.97	26.56	27.45	25.39	26.69	26.68	27.61	27.75	27.82	41
42	22.04	26.34	25.84	26.72	24.73	26.03	25.96	26.96	27.01	27.15	42
43	21.54	25.71	25.12	26.00	24.07	25.38	25.23	26.30	26.28	26.45	43
44	21.03	25.09	24.40	25.27	23.41	24.72	24.51	25.65	25.55	25.74	44
45	20.52	24.46	23.69	24.54	22.76	24.06	23.79	24.99	24.82	25.02	45
46	20.02	23.82	22.97	23.81	22.11	23.40	23.08	24.33	24.09	24.30	46
47	19.51	23.17	22.27	23.08	21.46	22.74	22.38	23.66	23.38	23.57	47
48	19.00	22.50	21.56	22.36	20.82	22.08	21.68	22.98	22.66	22.83	48
49	18.49	21.81	20.87	21.63	20.17	21.42	20.99	22.30	21.95	22.08	49

TABLE LXXX.

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EXPECTATION OF LIFE BY VARIOUS TABLES—YEARS AND DECIMALS.

AGE. x.	North-ampton.	Carlisle.	17 Offices.	Am. 1858.	English Life, No. 3.		20 Offices. H^M.		30 Am. Offices.		AGE. x.
					Males.	Females.	Males.	Females.	Males.	Females.	
50	17.99	21.11	20.18	20.91	19.54	20.75	20.31	21.62	21.24	21.33	50
51	17.50	20.39	19.50	20.20	18.90	20.09	19.63	20.93	20.54	20.59	51
52	17.02	19.68	18.82	19.49	18.28	19.42	18.95	20.24	19.84	19.87	52
53	16.54	18.97	18.16	18.79	17.67	18.75	18.28	19.55	19.15	19.15	53
54	16.06	18.28	17.50	18.09	17.06	18.08	17.62	18.87	18.47	18.44	54
55	15.58	17.58	16.86	17.40	16.45	17.43	16.96	18.19	17.80	17.73	55
56	15.10	16.89	16.22	16.72	15.86	16.79	16.32	17.52	17.13	17.03	56
57	14.63	16.21	15.59	16.05	15.26	16.17	15.68	16.85	16.47	16.35	57
58	14.15	15.55	14.97	15.39	14.68	15.55	15.05	16.18	15.83	15.67	58
59	13.68	14.92	14.37	14.74	14.10	14.94	14.44	15.52	15.19	15.02	59
60	13.21	14.34	13.77	14.10	13.53	14.34	13.83	14.85	14.56	14.37	60
61	12.75	13.82	13.18	13.47	12.96	13.75	13.24	14.20	13.94	13.73	61
62	12.28	13.31	12.61	12.86	12.41	13.17	12.66	13.56	13.34	13.10	62
63	11.81	12.81	12.05	12.26	11.87	12.60	12.10	12.95	12.74	12.49	63
64	11.35	12.30	11.51	11.67	11.34	12.05	11.55	12.35	12.16	11.90	64
65	10.88	11.79	10.97	11.10	10.82	11.51	11.01	11.77	11.60	11.31	65
66	10.42	11.27	10.46	10.54	10.32	10.98	10.49	11.21	11.04	10.74	66
67	9.96	10.75	9.96	10.00	9.83	10.47	9.98	10.66	10.50	10.19	67
68	9.50	10.23	9.47	9.47	9.36	9.97	9.48	10.12	9.97	9.65	68
69	9.05	9.70	9.00	8.97	8.90	9.48	8.98	9.59	9.46	9.13	69
70	8.60	9.18	8.54	8.48	8.45	9.02	8.50	9.08	8.97	8.62	70
71	8.17	8.65	8.10	8.00	8.03	8.57	8.03	8.59	8.49	8.13	71
72	7.74	8.16	7.67	7.55	7.62	8.13	7.58	8.12	8.02	7.65	72
73	7.33	7.72	7.26	7.11	7.22	7.71	7.15	7.69	7.57	7.20	73
74	6.92	7.33	6.86	6.68	6.85	7.31	6.75	7.29	7.14	6.76	74
75	6.54	7.01	6.48	6.27	6.49	6.93	6.38	6.93	6.72	6.34	75
76	6.18	6.69	6.11	5.88	6.15	6.56	6.02	6.60	6.32	5.93	76
77	5.83	6.40	5.76	5.49	5.82	6.21	5.67	6.31	5.93	5.55	77
78	5.48	6.12	5.42	5.11	5.51	5.88	5.34	6.02	5.57	5.18	78
79	5.11	5.80	5 09	4.74	5.21	5.56	5.03	5.74	5.21	4.82	79
80	4.75	5.51	4.78	4.39	4.93	5.26	4.72	5.45	4.87	4.49	80
81	4.41	5.21	4.48	4.05	4.66	4.98	4.43	5.14	4.55	4.17	81
82	4.09	4.93	4.18	3.71	4.41	4.71	4.17	4.79	4.24	3.88	82
83	3.80	4.65	3.90	3.39	4.17	4.45	3.93	4.44	3.95	3.59	83
84	3.58	4.39	3.63	3.08	3.95	4.21	3.71	4.11	3.67	3.33	84
85	3.37	4.12	3.36	2.77	3.73	3.98	3.51	3.81	3.40	3.08	85
86	3.19	3.90	3.10	2.47	3.53	3.76	3.31	3.57	3.14	2.84	86
87	3.01	3.71	2.84	2.18	3.34	3.56	3.10	3.39	2.89	2.62	87
88	2.86	3.59	2.59	1.91	3.16	3.36	2.88	3.29	2.64	2.42	88
89	2.66	3.47	2.35	1.66	3.00	3.18	2.63	3.27	2.39	2.23	89
90	2.41	3.28	2·11	1.42	2.84	3.01	2.36	3.30	2.17	2.05	90
91	2.09	3.26	1.89	1.19	2.69	2.85	2.08	3.37	1.98	1.89	91
92	1.75	3.37	1.67	.98	2.55	2.70	1.80	3.42	1.81	1.73	92
93	1.37	3.48	1.47	.80	2.41	2.55	1.50	3.30	1.64	1.59	93
94	1.05	3.53	1.28	.64	2.29	2.42	1.20	2.91	1.49	1.46	94
95	.75	3.53	1.12	.50	2.17	2.29	.93	2.47	1.34	1.34	95
96	.50	3.46	.99		2.06	2.17	.68	1.98	1.18	1.23	96
97		3.28	.89		1.95	2.06	.50	1.49	1.03	1.09	97
98		3.07	.75		1.85	1.96		1.00	.83	.93	98
99		2.77	.50		1.76	1.86		.50	.50	.50	99
100		2.28			1.68	1.76					100

TABLE LXXXI.

PERCENTAGE OF MORTALITY BY SEVERAL LIFE TABLES.

AGE.	North-ampton.	Carlisle.	English Life, No. 3.		17 Offices.	20 Offices. HM.	American, 1858.	30 Offices, Am. Males.	AGE.
			Males.	Females.					
0	25.7511	15.3900	18.326	14.749					0
1	15.8035	8.0605	6.680	6.436					1
2	6.8928	6.4918	3.624	3.603					2
3	4.9403	3.7943	2.416	2.450					3
4	3.0562	2.8723	1.799	1.785					4
5	2.9445	1.7810	1.369	1.337					5
6	2.3084	1.2283	1.088	1.061					6
7	1.8565	0.8796	0.920	0.912					7
8	1.3757	.6579	.767	.771					8
9	1.0462	.5082	.649	.664					9
10	0.9163	.4489	.563	.587	0.6760	0.4900	0.7490	0.6479	10
11	.8892	.4820	.507	.537	.6786	.3990	.7516	.6502	11
12	.8972	.5000	.478	.512	.6812	.3319	.7542	.6516	12
13	.9053	.5182	.472	.509	.6848	.2915	.7569	.6536	13
14	.9136	.5525	.486	.524	.6896	.2762	.7596	.6568	14
15	.9220	.6191	.519	.556	.6944	.2871	.7633	.6593	15
16	.9864	.6708	.564	.601	.7003	.3247	.7660	.6614	16
17	1.0902	.6914	.622	.658	.7062	.3882	.7688	.6648	17
18	1.1972	.6962	.688	.721	.7134	.4792	.7726	.6683	18
19	1.2887	.7011	.759	.789	.7206	.5745	.7765	.6717	19
20	1.4030	.7061	.832	.860	.7291	.6329	.7804	.6763	20
21	1.4822	.6946	.850	.882	.7377	.6725	.7855	.6808	21
22	1.5045	.6994	.868	.904	.7464	.6844	.7906	.6856	22
23	1.5275	.7043	.886	.925	.7564	.6764	.7958	.6911	23
24	1.5512	.7093	.903	.946	.7666	.6639	.8011	.6973	24
25	1.5756	.7314	.920	.966	.7770	.6630	.8064	.7032	25
26	1.6009	.7368	.938	.985	.7887	.6685	.8130	.7115	26
27	1.6269	.7768	.955	1.005	.8006	.6904	.8196	.7190	27
28	1.6538	.8699	.974	1.024	.8139	.7172	.8264	.7275	28
29	1.6816	.9828	.993	1.043	.8275	.7473	.8344	.7385	29
30	1.7104	1.0103	1.013	1.063	.8425	.7723	.8426	.7485	30
31	1.7401	1.0206	1.034	1.082	.8578	.7917	.8510	.7602	31
32	1.7710	1.0130	1.056	1.102	.8747	.8105	.8607	.7727	32
33	1.8029	1.0051	1.080	1.123	.8919	.8285	.8717	.7871	33
34	1.8360	1.0151	1.105	1.143	.9095	.8504	.8830	.8027	34
35	1.8704	1.0257	1.133	1.165	.9288	.8774	.8946	.8212	35
36	1.9060	1.0552	1.162	1.186	.9485	.9109	.9088	.8390	36
37	1.9430	1.0855	1.194	1.210	.9687	.9464	.9234	.8591	37
38	1.9815	1.1167	1.229	1.234	.9906	.9780	.9408	.8826	38
39	2.0216	1.1877	1.265	1.259	1.0131	1.0082	.9586	.9077	39
40	2.0908	1.3005	1.306	1.285	1.0362	1.0306	.9794	.9360	40
41	2.1635	1.3775	1.348	1.313	1.0612	1.0487	1.0008	.9647	41
42	2.2401	1.4373	1.394	1.341	1.0894	1.0734	1.0252	.9998	42
43	2.2914	1.4582	1.444	1.371	1.1251	1.1127	1.0517	1.0351	43
44	2.3452	1.4798	1.497	1.403	1.1697	1.1556	1.0829	1.0761	44
45	2.4015	1.4809	1.554	1.437	1.2212	1.2192	1.1163	1.1203	45
46	2.4606	1.4816	1.615	1.473	1.2839	1.2940	1.1562	1.1688	46
47	2.5227	1.4603	1.680	1.510	1.3516	1.3702	1.2000	1.2227	47
48	2.5879	1.3935	1.749	1.549	1.4260	1.4440	1.2509	1.2814	48
49	2.6908	1.3683	1.823	1.591	1.5061	1.5220	1.3106	1.3459	49

TABLE LXXXI. *233

PERCENTAGE OF MORTALITY BY SEVERAL LIFE TABLES.

AGE.	North-ampton.	Carlisle.	English Life, No. 3.		17 Offices.	20 Offices. HM.	American, 1858.	30 Offices, Am.Males.	AGE.
			Males.	Females.					
50	2.8351	1.3418	1.902	1.634	1.5938	1.5950	1.3781	1.4175	50
51	2.9539	1.4292	2.042	1.680	1.6898	1.6670	1.4541	1.4955	51
52	3.0438	1.5201	2.145	1.729	1.7947	1.7549	1.5389	1.5814	52
53	3.1394	1.6148	2.251	1.780	1.9093	1.8600	1.6333	1.6752	53
54	3.2411	1.6896	2.364	1.987	2.0313	1.9734	1.7396	1.7779	54
55	3.3497	1.7923	2.485	2.120	2.1664	2.1033	1.8571	1.8930	55
56	3.4658	1.9000	2.617	2.259	2.3126	2.2453	1.9885	2.0172	56
57	3.5902	2.0897	2.763	2.407	2.4679	2.3990	2.1335	2.1560	57
58	3.7239	2.4206	2.925	2.566	2.6386	2.5626	2.2936	2.3060	58
59	3.8679	2.8274	3.105	2.738	2.8246	2.7539	2.4720	2.4707	59
60	4.0235	3.3489	3.305	2.927	3.0336	2.9678	2.6693	2.6527	60
61	4.1922	3.5785	3.529	3.134	3.2612	3.2038	2.8880	2.8529	61
62	4.3223	3.7408	3.777	3.362	3.5121	3.4636	3.1292	3.0700	62
63	4.5176	3.8250	4.053	3.614	3.7840	3.7490	3.3943	3.3108	63
64	4.6729	3.9771	4.360	3.891	4.0826	4.0410	3.6873	3.5740	64
65	4.9020	4.1087	4.698	4.198	4.4082	4.3431	4.0129	3.8640	65
66	5.1546	4.2502	5.071	4.535	4.7614	4.6569	4.3707	4.1789	66
67	5.4348	4.4388	5.483	4.906	5.1474	4.9889	4.7647	4.5282	67
68	5.7471	4.6450	5.933	5.314	5.5630	5.3234	5.2002	4.9043	68
69	6.0975	4.9109	6.425	5.760	6.0087	5.7340	5.6762	5.3242	69
70	6.4935	5.1645	6.962	6.247	6.4933	6.2192	6.1993	5.7778	70
71	6.9444	5.8849	7.545	6.778	7.0158	6.8050	6.7665	6.2775	71
72	7.4627	6.8129	8.176	7.355	7.5805	7.4940	7.3733	6.8216	72
73	8.0645	7.8117	8.861	7.980	8.1884	8.2860	8.0178	7.4149	73
74	8.7719	9.0168	9.599	8.659	8.8468	9.1195	8.7028	8.0709	74
75	9.6154	9.5522	10.391	9.389	9.5560	9.8361	9.4371	8.7792	75
76	10.2393	10.2970	11.246	10.175	10.3180	10.6372	10.2311	9.5503	76
77	10.8148	10.7432	12.158	11.024	11.1469	11.4686	11.1064	10.3996	77
78	11.2957	10.8821	13.136	11.930	12.0444	12.3213	12.0827	11.3181	78
79	12.1723	11.8409	14.178	12.903	13.0065	13.3059	13.1734	12.3185	79
80	13.4328	12.1721	15.290	13.942	14.0406	14.4652	14.4466	13.4068	80
81	14.7783	13.3811	16.474	15.048	15.1436	15.8036	15.8605	14.5833	81
82	16.4740	14.0690	17.726	16.227	16.3194	17.1352	17.4297	15.8704	82
83	19.0311	15.0883	19.057	17.483	17.5913	18.5853	19.1561	17.2458	83
84	20.5128	15.8790	20.471	18.812	18.9678	19.8877	21.1359	18.7523	84
85	22.0430	17.5281	21.966	20.227	20.5095	20.9885	23.5552	20.3633	85
86	23.4483	19.3461	23.529	21.716	22.2480	21.9655	26.5681	22.0841	86
87	25.2252	21.6216	25.196	23.292	24.2234	23.1230	30.3020	23.9885	87
88	25.3012	21.9828	26.947	24.960	26.5274	23.9300	34.6692	25.9550	88
89	25.8065	21.5470	28.799	26.726	29.2382	25.3196	39.5863	29.2600	89
90	26.0869	26.0563	30.717	28.564	32.3730	27.9452	45.4546	32.8154	90
91	29.4118	28.5714	32.764	30.521	36.0987	31.2737	53.2468	35.8544	91
92	33.3333	28.0000	34.897	32.579	40.5263	35.1314	63.4259	38.9736	92
93	43.7500	25.9259	37.139	34.725	45.7227	41.5778	73.4177	42.5000	93
94	55.5556	25.0000	39.430	36.935	51.6304	50.7300	85.7143	46.2451	94
95	75.0000	23.3333	42.035	39.338	58.4270	63.7036	100.000	50.0000	95
96	100.0000	21.7391	44.444	41.873	64.8649	81.6337		55.8824	96
97		22.2222	47.312	44.397	69.2308	100.0000		60.0000	97
98		21.4286	50.000	47.333	75.0000			66.6666	98
99		18.1818	53.398	49.730	100.0000			100.0000	99
100		22.2222	55.000	53.153					100

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9		
.000	10000	10002	10005	10007	10009	10012	10014	10016	10018	10021		
.001	10023	10025	10028	10030	10032	10035	10037	10039	10042	10044	1	0
.002	10046	10048	10051	10053	10055	10058	10060	10062	10065	10067	2	0
.003	10069	10072	10074	10076	10079	10081	10083	10086	10088	10090	3	1
.004	10093	10095	10097	10100	10102	10104	10106	10109	10111	10113	4	1
.005	10116	10118	10120	10123	10125	10127	10130	10132	10134	10137	5	1
.006	10139	10141	10144	10146	10148	10151	10153	10155	10158	10160	6	1
.007	10162	10165	10167	10170	10172	10174	10177	10179	10181	10184	7	2
.008	10186	10188	10191	10193	10195	10198	10200	10202	10205	10207	8	2
.009	10209	10212	10214	10216	10219	10221	10224	10226	10228	10231	9	2
.010	10233	10235	10238	10240	10242	10245	10247	10249	10252	10254		
.011	10257	10259	10261	10264	10266	10268	10271	10273	10275	10278	1	0
.012	10280	10283	10285	10287	10290	10292	10294	10297	10299	10301	2	0
.013	10304	10306	10309	10311	10313	10316	10318	10320	10323	10325	3	1
.014	10328	10330	10332	10335	10337	10340	10342	10344	10347	10349	4	1
.015	10351	10354	10356	10359	10361	10363	10366	10368	10371	10373	5	1
.016	10375	10378	10380	10382	10385	10387	10390	10392	10394	10397	6	1
.017	10399	10402	10404	10406	10409	10411	10414	10416	10418	10421	7	2
.018	10423	10426	10428	10430	10433	10435	10438	10440	10442	10445	8	2
.019	10447	10450	10452	10454	10457	10459	10462	10464	10466	10469	9	2
.020	10471	10474	10476	10479	10481	10483	10486	10488	10491	10493		
.021	10495	10498	10500	10503	10505	10508	10510	10512	10515	10517	1	0
.022	10520	10522	10524	10527	10529	10532	10534	10537	10539	10541	2	0
.023	10544	10546	10549	10551	10554	10556	10558	10561	10563	10566	3	1
.024	10568	10571	10573	10575	10578	10580	10583	10585	10588	10590	4	1
.025	10593	10595	10597	10600	10602	10605	10607	10610	10612	10615	5	1
.026	10617	10619	10622	10624	10627	10629	10632	10634	10637	10639	6	1
.027	10641	10644	10646	10649	10651	10654	10656	10659	10661	10664	7	2
.028	10666	10668	10671	10673	10676	10678	10681	10683	10686	10688	8	2
.029	10691	10693	10695	10698	10700	10703	10705	10708	10710	10713	9	2
.030	10715	10718	10720	10723	10725	10728	10730	10732	10735	10737		
.031	10740	10742	10745	10747	10750	10752	10755	10757	10760	10762	1	0
.032	10765	10767	10770	10772	10775	10777	10780	10782	10784	10787	2	1
.033	10789	10792	10794	10797	10799	10802	10804	10807	10809	10812	3	1
.034	10814	10817	10819	10822	10824	10827	10829	10832	10834	10837	4	1
.035	10839	10842	10844	10847	10849	10852	10854	10857	10859	10862	5	1
.036	10864	10867	10869	10872	10874	10877	10879	10882	10884	10887	6	2
.037	10889	10892	10894	10897	10899	10902	10904	10907	10909	10912	7	2
.038	10914	10917	10919	10922	10924	10927	10929	10932	10935	10937	8	2
.039	10940	10942	10945	10947	10950	10952	10955	10957	10960	10962	9	2
.040	10965	10967	10970	10972	10975	10977	10980	10982	10985	10988		
.041	10990	10993	10995	10998	11000	11003	11005	11008	11010	11013	1	0
.042	11015	11018	11020	11023	11026	11028	11031	11033	11036	11038	2	1
.043	11041	11043	11046	11048	11051	11054	11056	11059	11061	11064	3	1
.044	11066	11069	11071	11074	11076	11079	11082	11084	11087	11089	4	1
.045	11092	11094	11097	11099	11102	11105	11107	11110	11112	11115	5	1
.046	11117	11120	11122	11125	11128	11130	11133	11135	11138	11140	6	2
.047	11143	11146	11148	11151	11153	11156	11158	11161	11163	11166	7	2
.048	11169	11171	11174	11176	11179	11181	11184	11187	11189	11192	8	2
.049	11194	11197	11200	11202	11205	11207	11210	11212	11215	11218	9	2
Log.	0	1	2	3	4	5	6	7	8	9		

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.050	11220	11223	11225	11228	11231	11233	11236	11238	11241	11243		
.051	11246	11249	11251	11254	11256	11259	11262	11264	11267	11269	1	0
.052	11272	11275	11277	11280	11282	11285	11288	11290	11293	11295	2	1
.053	11298	11301	11303	11306	11308	11311	11314	11316	11319	11321	3	1
.054	11324	11327	11329	11332	11334	11337	11340	11342	11345	11347	4	1
.055	11350	11353	11355	11358	11361	11363	11366	11368	11371	11374	5	1
.056	11376	11379	11382	11384	11387	11389	11392	11395	11397	11400	6	2
.057	11402	11405	11408	11410	11413	11416	11418	11421	11424	11426	7	2
.058	11429	11431	11434	11437	11439	11442	11445	11447	11450	11452	8	2
.059	11455	11458	11460	11463	11466	11468	11471	11474	11476	11479	9	2
.060	11482	11484	11487	11489	11492	11495	11497	11500	11503	11505		
.061	11508	11511	11513	11516	11519	11521	11524	11527	11529	11532	1	0
.062	11535	11537	11540	11543	11545	11548	11550	11553	11556	11558	2	1
.063	11561	11564	11566	11569	11572	11574	11577	11580	11582	11585	3	1
.064	11588	11590	11593	11596	11598	11601	11604	11606	11609	11612	4	1
.065	11614	11617	11620	11623	11625	11628	11631	11633	11636	11639	5	1
.066	11641	11644	11647	11649	11652	11655	11657	11660	11663	11665	6	2
.067	11668	11671	11673	11676	11679	11682	11684	11687	11690	11692	7	2
.068	11695	11698	11700	11703	11706	11708	11711	11714	11717	11719	8	2
.069	11722	11725	11727	11730	11733	11735	11738	11741	11744	11746	9	2
.070	11749	11752	11754	11757	11760	11763	11765	11768	11771	11773		
.071	11776	11779	11781	11784	11787	11790	11792	11795	11798	11800	1	0
.072	11803	11806	11809	11811	11814	11817	11820	11822	11825	11828	2	1
.073	11830	11833	11836	11839	11841	11844	11847	11849	11852	11855	3	1
.074	11858	11860	11863	11866	11869	11871	11874	11877	11880	11882	4	1
.075	11885	11888	11890	11893	11896	11899	11901	11904	11907	11910	5	1
.076	11912	11915	11918	11921	11923	11926	11929	11932	11934	11937	6	2
.077	11940	11943	11945	11948	11951	11954	11956	11959	11962	11965	7	2
.078	11967	11970	11973	11976	11978	11981	11984	11987	11989	11992	8	2
.079	11995	11998	12001	12003	12006	12009	12012	12014	12017	12020	9	2
.080	12023	12025	12028	12031	12034	12036	12039	12042	12045	12048		
.081	12050	12053	12056	12059	12061	12064	12067	12070	12073	12075	1	0
.082	12078	12081	12084	12086	12089	12092	12095	12098	12100	12103	2	1
.083	12106	12109	12112	12114	12117	12120	12123	12126	12128	12131	3	1
.084	12134	12137	12139	12142	12145	12148	12151	12153	12156	12159	4	1
.085	12162	12165	12167	12170	12173	12176	12179	12181	12184	12187	5	1
.086	12190	12193	12196	12198	12201	12204	12207	12210	12212	12215	6	2
.087	12218	12221	12224	12226	12229	12232	12235	12238	12241	12243	7	2
.088	12246	12249	12252	12255	12257	12260	12263	12266	12269	12272	8	2
.089	12274	12277	12280	12283	12286	12289	12291	12294	12297	12300	9	3
.090	12303	12306	12308	12311	12314	12317	12320	12323	12325	12328		
.091	12331	12334	12337	12340	12342	12345	12348	12351	12354	12357	1	0
.092	12359	12362	12365	12368	12371	12374	12377	12379	12382	12385	2	1
.093	12388	12391	12394	12397	12399	12402	12405	12408	12411	12414	3	1
.094	12417	12419	12422	12425	12428	12431	12434	12437	12439	12442	4	1
.095	12445	12448	12451	12454	12457	12459	12462	12465	12468	12471	5	1
.096	12474	12477	12480	12482	12485	12488	12491	12494	12497	12500	6	2
.097	12503	12505	12508	12511	12514	12517	12520	12523	12526	12529	7	2
.098	12531	12534	12537	12540	12543	12546	12549	12552	12555	12557	8	2
.099	12560	12563	12566	12569	12572	12575	12578	12581	12583	12586	9	3
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.100	12589	12592	12595	12598	12601	12604	12607	12610	12612	12615		
.101	12618	12621	12624	12627	12630	12633	12636	12639	12642	12644	1	0
.102	12647	12650	12653	12656	12659	12662	12665	12668	12671	12674	2	1
.103	12677	12679	12682	12685	12688	12691	12694	12697	12700	12703	3	1
.104	12706	12709	12712	12715	12717	12720	12723	12726	12729	12732	4	1
.105	12735	12738	12741	12744	12747	12750	12753	12756	12759	12761	5	1
.106	12764	12767	12770	12773	12776	12779	12782	12785	12788	12791	6	2
.107	12794	12797	12800	12803	12806	12809	12812	12814	12817	12820	7	2
.108	12823	12826	12829	12832	12835	12838	12841	12844	12847	12850	8	2
.109	12853	12856	12859	12862	12865	12868	12871	12874	12877	12880	9	3
.110	12882	12885	12888	12891	12894	12897	12900	12903	12906	12909		
.111	12912	12915	12918	12921	12924	12927	12930	12933	12936	12939	1	0
.112	12942	12945	12948	12951	12954	12957	12960	12963	12966	12969	2	1
.113	12972	12975	12978	12981	12984	12987	12990	12993	12996	12999	3	1
.114	13002	13005	13008	13011	13014	13017	13020	13023	13026	13029	4	1
.115	13032	13035	13038	13041	13044	13047	13050	13053	13056	13059	5	2
.116	13062	13065	13068	13071	13074	13077	13080	13083	13086	13089	6	2
.117	13092	13095	13098	13101	13104	13107	13110	13113	13116	13119	7	2
.118	13122	13125	13128	13131	13134	13137	13140	13143	13146	13149	8	2
.119	13152	13155	13158	13161	13164	13167	13170	13173	13176	13180	9	3
.120	13183	13186	13189	13192	13195	13198	13201	13204	13207	13210		
.121	13213	13216	13219	13222	13225	13228	13231	13234	13237	13240	1	0
.122	13243	13246	13250	13253	13256	13259	13262	13265	13268	13271	2	1
.123	13274	13277	13280	13283	13286	13289	13292	13295	13298	13301	3	1
.124	13305	13308	13311	13314	13317	13320	13323	13326	13329	13332	4	1
.125	13335	13338	13341	13344	13348	13351	13354	13357	13360	13363	5	2
.126	13366	13369	13372	13375	13378	13381	13384	13388	13391	13394	6	2
.127	13397	13400	13403	13406	13409	13412	13415	13418	13421	13425	7	2
.128	13428	13431	13434	13437	13440	13443	13446	13449	13452	13456	8	2
.129	13459	13462	13465	13468	13471	13474	13477	13480	13483	13487	9	3
.130	13490	13493	13496	13499	13502	13505	13508	13511	13515	13518		
.131	13521	13524	13527	13530	13533	13536	13539	13543	13546	13549	1	0
.132	13552	13555	13558	13561	13564	13568	13571	13574	13577	13580	2	1
.133	13583	13586	13589	13593	13596	13599	13602	13605	13608	13611	3	1
.134	13614	13618	13621	13624	13627	13630	13633	13636	13640	13643	4	1
.135	13646	13649	13652	13655	13658	13662	13665	13668	13671	13674	5	2
.136	13677	13680	13684	13687	13690	13693	13696	13699	13703	13706	6	2
.137	13709	13712	13715	13718	13721	13725	13728	13731	13734	13737	7	2
.138	13740	13744	13747	13750	13753	13756	13759	13763	13766	13769	8	3
.139	13772	13775	13778	13782	13785	13788	13791	13794	13797	13801	9	3
.140	13804	13807	13810	13813	13817	13820	13823	13826	13829	13832		
.141	13836	13839	13842	13845	13848	13852	13855	13858	13861	13864	1	0
.142	13868	13871	13874	13877	13880	13884	13887	13890	13893	13896	2	1
.143	13900	13903	13906	13909	13912	13916	13919	13922	13925	13928	3	1
.144	13932	13935	13938	13941	13944	13948	13951	13954	13957	13960	4	1
.145	13964	13967	13970	13973	13977	13980	13983	13986	13989	13993	5	2
.146	13996	13999	14002	14006	14009	14012	14015	14018	14022	14025	6	2
.147	14028	14031	14035	14038	14041	14044	14048	14051	14054	14057	7	2
.148	14060	14064	14067	14070	14073	14077	14080	14083	14086	14090	8	3
.149	14093	14096	14099	14103	14106	14109	14112	14116	14119	14122	9	3
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

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ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.150	14125	14129	14132	14135	14138	14142	14145	14148	14151	14155		
.151	14158	14161	14164	14168	14171	14174	14178	14181	14184	14187	1	0
.152	14191	14194	14197	14200	14204	14207	14210	14213	14217	14220	2	1
.153	14223	14227	14230	14233	14236	14240	14243	14246	14250	14253	3	1
.154	14256	14259	14263	14266	14269	14272	14276	14279	14282	14286	4	1
.155	14289	14292	14296	14299	14302	14305	14309	14312	14315	14319	5	2
.156	14322	14325	14328	14332	14335	14338	14342	14345	14348	14352	6	2
.157	14355	14358	14362	14365	14368	14371	14375	14378	14381	14385	7	2
.158	14388	14391	14395	14398	14401	14405	14408	14411	14415	14418	8	3
.159	14421	14424	14428	14431	14434	14438	14441	14444	14448	14451	9	3
.160	14454	14458	14461	14464	14468	14471	14474	14478	14481	14484		
.161	14488	14491	14494	14498	14501	14504	14508	14511	14514	14518	1	0
.162	14521	14524	14528	14531	14534	14538	14541	14545	14548	14551	2	1
.163	14555	14558	14561	14565	14568	14571	14575	14578	14581	14585	3	1
.164	14588	14592	14595	14598	14602	14605	14608	14612	14615	14618	4	1
.165	14622	14625	14629	14632	14635	14639	14642	14645	14649	14652	5	2
.166	14655	14659	14662	14666	14669	14672	14676	14679	14682	14686	6	2
.167	14689	14693	14696	14699	14703	14706	14710	14713	14716	14720	7	2
.168	14723	14727	14730	14733	14737	14740	14743	14747	14750	14754	8	3
.169	14757	14760	14764	14767	14771	14774	14777	14781	14784	14788	9	3
.170	14791	14794	14798	14801	14805	14808	14812	14815	14818	14822		
.171	14825	14829	14832	14835	14839	14842	14846	14849	14853	14856	1	0
.172	14859	14863	14866	14870	14873	14876	14880	14883	14887	14890	2	1
.173	14894	14897	14900	14904	14907	14911	14914	14918	14921	14925	3	1
.174	14928	14931	14935	14938	14942	14945	14949	14952	14955	14959	4	1
.175	14962	14966	14969	14973	14976	14980	14983	14986	14990	14993	5	2
.176	14997	15000	15004	15007	15011	15014	15018	15021	15024	15028	6	2
.177	15031	15035	15038	15042	15045	15049	15052	15056	15059	15063	7	2
.178	15066	15070	15073	15076	15080	15083	15087	15090	15094	15097	8	3
.179	15101	15104	15108	15111	15115	15118	15122	15125	15129	15132	9	3
.180	15136	15139	15143	15146	15150	15153	15157	15160	15164	15167		
.181	15171	15174	15177	15181	15184	15188	15191	15195	15198	15202	1	0
.182	15205	15209	15212	15216	15219	15223	15226	15230	15234	15237	2	1
.183	15241	15244	15248	15251	15255	15258	15262	15265	15269	15272	3	1
.184	15276	15279	15283	15286	15290	15293	15297	15300	15304	15307	4	1
.185	15311	15314	15318	15321	15325	15329	15332	15336	15339	15343	5	2
.186	15346	15350	15353	15357	15360	15364	15367	15371	15374	15378	6	2
.187	15382	15385	15389	15392	15396	15399	15403	15406	15410	15413	7	2
.188	15417	15421	15424	15428	15431	15435	15438	15442	15445	15449	8	3
.189	15453	15456	15460	15463	15467	15470	15474	15477	15481	15485	9	3
.190	15488	15492	15495	15499	15502	15506	15510	15513	15517	15520		
.191	15524	15527	15531	15535	15538	15542	15545	15549	15552	15556	1	0
.192	15560	15563	15567	15570	15574	15578	15581	15585	15588	15592	2	1
.193	15596	15599	15603	15606	15610	15613	15617	15621	15624	15628	3	1
.194	15631	15635	15639	15642	15646	15649	15653	15657	15660	15664	4	1
.195	15668	15671	15675	15678	15682	15686	15689	15693	15696	15700	5	2
.196	15704	15707	15711	15714	15718	15722	15725	15729	15733	15736	6	2
.197	15740	15743	15747	15751	15754	15758	15762	15765	15769	15772	7	3
.198	15776	15780	15783	15787	15791	15794	15798	15802	15805	15809	8	3
.199	15812	15816	15820	15823	15827	15831	15834	15838	15842	15845	9	3
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P.P.	
.200	15849	15853	15856	15860	15864	15867	15871	15874	15878	15882		
.201	15885	15889	15893	15896	15900	15904	15907	15911	15915	15918	1	0
.202	15922	15926	15929	15933	15937	15940	15944	15948	15951	15955	2	1
.203	15959	15962	15966	15970	15973	15977	15981	15985	15988	15992	3	1
.204	15996	15999	16003	16007	16010	16014	16018	16021	16025	16029	4	1
.205	16032	16036	16040	16044	16047	16051	16055	16058	16062	16066	5	2
.206	16069	16073	16077	16081	16084	16088	16092	16095	16099	16103	6	2
.207	16106	16110	16114	16118	16121	16125	16129	16132	16136	16140	7	3
.208	16144	16147	16151	16155	16158	16162	16166	16170	16173	16177	8	3
.209	16181	16185	16188	16192	16196	16199	16203	16207	16211	16214	9	3
.210	16218	16222	16226	16229	16233	16237	16241	16244	16248	16252		
.211	16255	16259	16263	16267	16270	16274	16278	16282	16285	16289	1	0
.212	16293	16297	16300	16304	16308	16312	16315	16319	16323	16327	2	1
.213	16331	16334	16338	16342	16346	16349	16353	16357	16361	16364	3	1
.214	16368	16372	16376	16379	16383	16387	16391	16395	16398	16402	4	2
.215	16406	16410	16413	16417	16421	16425	16429	16432	16436	16440	5	2
.216	16444	16448	16451	16455	16459	16463	16466	16470	16474	16478	6	2
.217	16482	16485	16489	16493	16497	16501	16504	16508	16512	16516	7	3
.218	16520	16523	16527	16531	16535	16539	16542	16546	16550	16554	8	3
.219	16558	16562	16565	16569	16573	16577	16581	16584	16588	16592	9	3
.220	16596	16600	16604	16607	16611	16615	16619	16623	16626	16630		
.221	16634	16638	16642	16646	16649	16653	16657	16661	16665	16669	1	0
.222	16672	16676	16680	16684	16688	16692	16696	16699	16703	16707	2	1
.223	16711	16715	16719	16722	16726	16730	16734	16738	16742	16746	3	1
.224	16749	16753	16757	16761	16765	16769	16773	16776	16780	16784	4	2
.225	16788	16792	16796	16800	16804	16807	16811	16815	16819	16823	5	2
.226	16827	16831	16834	16838	16842	16846	16850	16854	16858	16862	6	2
.227	16866	16869	16873	16877	16881	16885	16889	16893	16897	16901	7	3
.228	16904	16908	16912	16916	16920	16924	16928	16932	16936	16939	8	3
.229	16943	16947	16951	16955	16959	16963	16967	16971	16975	16979	9	3
.230	16982	16986	16990	16994	16998	17002	17006	17010	17014	17018		
.231	17022	17026	17029	17033	17037	17041	17045	17049	17053	17057	1	0
.232	17061	17065	17069	17073	17077	17080	17084	17088	17092	17096	2	1
.233	17100	17104	17108	17112	17116	17120	17124	17128	17132	17136	3	1
.234	17140	17144	17147	17151	17155	17159	17163	17167	17171	17175	4	2
.235	17179	17183	17187	17191	17195	17199	17203	17207	17211	17215	5	2
.236	17219	17223	17227	17231	17235	17239	17242	17246	17250	17254	6	2
.237	17258	17262	17266	17270	17274	17278	17282	17286	17290	17294	7	3
.238	17298	17302	17306	17310	17314	17318	17322	17326	17330	17334	8	3
.239	17338	17342	17346	17350	17354	17358	17362	17366	17370	17374	9	4
.240	17378	17382	17386	17390	17394	17398	17402	17406	17410	17414		
.241	17418	17422	17426	17430	17434	17438	17442	17446	17450	17454	1	0
.242	17458	17462	17466	17470	17474	17478	17482	17486	17490	17494	2	1
.243	17498	17502	17507	17511	17515	17519	17523	17527	17531	17535	3	1
.244	17539	17543	17547	17551	17555	17559	17563	17567	17571	17575	4	2
.245	17579	17583	17587	17591	17595	17599	17604	17608	17612	17616	5	2
.246	17620	17624	17628	17632	17636	17640	17644	17648	17652	17656	6	2
.247	17660	17664	17669	17673	17677	17681	17685	17689	17693	17697	7	3
.248	17701	17705	17709	17713	17717	17721	17726	17730	17734	17738	8	3
.249	17742	17746	17750	17754	17758	17762	17766	17771	17775	17779	9	4
Log	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *239

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.250	17783	17787	17791	17795	17799	17803	17807	17811	17816	17820		
.251	17824	17828	17832	17836	17840	17844	17848	17853	17857	17861	1	0
.252	17865	17869	17873	17877	17881	17885	17890	17894	17898	17902	2	1
.253	17906	17910	17914	17918	17923	17927	17931	17935	17939	17943	3	1
.254	17947	17951	17956	17960	17964	17968	17972	17976	17980	17985	4	2
.255	17989	17993	17997	18001	18005	18009	18014	18018	18022	18026	5	2
.256	18030	18034	18038	18043	18047	18051	18055	18059	18063	18068	6	2
.257	18072	18076	18080	18084	18088	18093	18097	18101	18105	18109	7	3
.258	18113	18118	18122	18126	18130	18134	18138	18143	18147	18151	8	3
.259	18155	18159	18164	18168	18172	18176	18180	18184	18189	18193	9	4
.260	18197	18201	18205	18210	18214	18218	18222	18226	18231	18235		
.261	18239	18243	18247	18252	18256	18260	18264	18268	18273	18277	1	0
.262	18281	18285	18289	18294	18298	18302	18306	18310	18315	18319	2	1
.263	18323	18327	18332	18336	18340	18344	18348	18353	18357	18361	3	1
.264	18365	18370	18374	18378	18382	18387	18391	18395	18399	18403	4	2
.265	18408	18412	18416	18420	18425	18429	18433	18437	18442	18446	5	2
.266	18450	18454	18459	18463	18467	18471	18476	18480	18484	18488	6	3
.267	18493	18497	18501	18505	18510	18514	18518	18523	18527	18531	7	3
.268	18535	18540	18544	18548	18552	18557	18561	18565	18569	18574	8	3
.269	18578	18582	18587	18591	18595	18599	18604	18608	18612	18617	9	4
.270	18621	18625	18629	18634	18638	18642	18647	18651	18655	18659		
.271	18664	18668	18672	18677	18681	18685	18690	18694	18698	18703	1	0
.272	18707	18711	18715	18720	18724	18728	18733	18737	18741	18746	2	1
.273	18750	18754	18759	18763	18767	18772	18776	18780	18785	18789	3	1
.274	18793	18797	18802	18806	18810	18815	18819	18823	18828	18832	4	2
.275	18836	18841	18845	18850	18854	18858	18863	18867	18871	18876	5	2
.276	18880	18884	18889	18893	18897	18902	18906	18910	18915	18919	6	3
.277	18923	18928	18932	18937	18941	18945	18950	18954	18958	18963	7	3
.278	18967	18971	18976	18980	18985	18989	18993	18998	19002	19006	8	3
.279	19011	19015	19020	19024	19028	19033	19037	19041	19046	19050	9	4
.280	19055	19059	19063	19068	19072	19077	19081	19085	19090	19094		
.281	19099	19103	19107	19112	19116	19121	19125	19129	19134	19138	1	0
.282	19143	19147	19151	19156	19160	19165	19169	19173	19178	19182	2	1
.283	19187	19191	19196	19200	19204	19209	19213	19218	19222	19226	3	1
.284	19231	19235	19240	19244	19249	19253	19258	19262	19266	19271	4	2
.285	19275	19280	19284	19289	19293	19297	19302	19306	19311	19315	5	2
.286	19320	19324	19329	19333	19337	19342	19346	19351	19355	19360	6	3
.287	19364	19369	19373	19378	19382	19387	19391	19395	19400	19404	7	3
.288	19409	19413	19418	19422	19427	19431	19436	19440	19445	19449	8	4
.289	19454	19458	19463	19467	19472	19476	19480	19485	19489	19494	9	4
.290	19498	19503	19507	19512	19516	19521	19525	19530	19534	19539		
.291	19543	19548	19552	19557	19561	19566	19570	19575	19579	19584	1	0
.292	19588	19593	19597	19602	19606	19611	19616	19620	19625	19629	2	1
.293	19634	19638	19643	19647	19652	19656	19661	19665	19670	19674	3	1
.294	19679	19683	19688	19692	19697	19702	19706	19711	19715	19720	4	2
.295	19724	19729	19733	19738	19742	19747	19751	19756	19761	19765	5	2
.296	19770	19774	19779	19783	19788	19792	19797	19802	19806	19811	6	3
.297	19815	19820	19824	19829	19834	19838	19843	19847	19852	19856	7	3
.298	19861	19866	19870	19875	19879	19884	19888	19893	19898	19902	8	4
.299	19907	19911	19916	19920	19925	19930	19934	19939	19943	19948	9	4
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.300	19953	19957	19962	19966	19971	19976	19980	19985	19989	19994		
.301	19999	20003	20008	20012	20017	20022	20026	20031	20035	20040	1	0
.302	20045	20049	20054	20059	20063	20068	20072	20077	20082	20086	2	1
.303	20091	20096	20100	20105	20109	20114	20119	20123	20128	20133	3	1
.304	20137	20142	20147	20151	20156	20160	20165	20170	20174	20179	4	2
.305	20184	20188	20193	20198	20202	20207	20212	20216	20221	20226	5	2
.306	20230	20235	20240	20244	20249	20253	20258	20263	20267	20272	6	3
.307	20277	20281	20286	20291	20296	20300	20305	20310	20314	20319	7	3
.308	20324	20328	20333	20338	20342	20347	20352	20356	20361	20366	8	4
.309	20370	20375	20380	20384	20389	20394	20399	20403	20408	20413	9	4
.310	20417	20422	20427	20431	20436	20441	20446	20450	20455	20460		
.311	20464	20469	20474	20479	20483	20488	20493	20497	20502	20507	1	0
.312	20512	20516	20521	20526	20531	20535	20540	20545	20549	20554	2	1
.313	20559	20564	20568	20573	20578	20583	20587	20592	20597	20602	3	1
.314	20606	20611	20616	20621	20625	20630	20635	20640	20644	20649	4	2
.315	20654	20659	20663	20668	20673	20678	20682	20687	20692	20697	5	2
.316	20701	20706	20711	20716	20720	20725	20730	20735	20740	20744	6	3
.317	20749	20754	20759	20763	20768	20773	20778	20783	20787	20792	7	3
.318	20797	20802	20807	20811	20816	20821	20826	20831	20835	20840	8	4
.319	20845	20850	20855	20859	20864	20869	20874	20879	20883	20888	9	4
.320	20893	20898	20903	20907	20912	20917	20922	20927	20931	20936		
.321	20941	20946	20951	20956	20960	20965	20970	20975	20980	20985	1	0
.322	20989	20994	20999	21004	21009	21014	21018	21023	21028	21033	2	1
.323	21038	21043	21047	21052	21057	21062	21067	21072	21077	21081	3	1
.324	21086	21091	21096	21101	21106	21111	21115	21120	21125	21130	4	2
.325	21135	21140	21145	21149	21154	21159	21164	21169	21174	21179	5	2
.326	21184	21188	21193	21198	21203	21208	21213	21218	21223	21228	6	3
.327	21232	21237	21242	21247	21252	21257	21262	21267	21272	21276	7	3
.328	21281	21286	21291	21296	21301	21306	21311	21316	21321	21326	8	4
.329	21330	21335	21340	21345	21350	21355	21360	21365	21370	21375	9	4
.330	21380	21385	21389	21394	21399	21404	21409	21414	21419	21424		
.331	21429	21434	21439	21444	21449	21454	21459	21463	21468	21473	1	0
.332	21478	21483	21488	21493	21498	21503	21508	21513	21518	21523	2	1
.333	21528	21533	21538	21543	21548	21553	21558	21563	21568	21572	3	1
.334	21577	21582	21587	21592	21597	21602	21607	21612	21617	21622	4	2
.335	21627	21632	21637	21642	21647	21652	21657	21662	21667	21672	5	2
.336	21677	21682	21687	21692	21697	21702	21707	21712	21717	21722	6	3
.337	21727	21732	21737	21742	21747	21752	21757	21762	21767	21772	7	3
.338	21777	21782	21787	21792	21797	21802	21807	21812	21817	21822	8	4
.339	21827	21832	21837	21842	21847	21852	21857	21863	21868	21873	9	4
.340	21878	21883	21888	21893	21898	21903	21908	21913	21918	21923		
.341	21928	21933	21938	21943	21948	21953	21958	21963	21968	21974	1	1
.342	21979	21984	21989	21994	21999	22004	22009	22014	22019	22024	2	1
.343	22029	22034	22039	22044	22050	22055	22060	22065	22070	22075	3	2
.344	22080	22085	22090	22095	22100	22105	22111	22116	22121	22126	4	2
.345	22131	22136	22141	22146	22151	22156	22162	22167	22172	22177	5	3
.346	22182	22187	22192	22197	22202	22208	22213	22218	22223	22228	6	3
.347	22233	22238	22243	22248	22254	22259	22264	22269	22274	22279	7	4
.348	22284	22289	22295	22300	22305	22310	22315	22320	22325	22331	8	4
.349	22336	22341	22346	22351	22356	22361	22367	22372	22377	22382	9	5
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *241

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.350	22387	22392	22398	22403	22408	22413	22418	22423	22428	22434		
.351	22439	22444	22449	22454	22459	22465	22470	22475	22480	22485	1	1
.352	22491	22496	22501	22506	22511	22516	22522	22527	22532	22537	2	1
.353	22542	22548	22553	22558	22563	22568	22574	22579	22584	22589	3	2
.354	22594	22600	22605	22610	22615	22620	22626	22631	22636	22641	4	2
.355	22646	22652	22657	22662	22667	22673	22678	22683	22688	22693	5	3
.356	22699	22704	22709	22714	22720	22725	22730	22735	22740	22746	6	3
.357	22751	22756	22761	22767	22772	22777	22782	22788	22793	22798	7	4
.358	22803	22809	22814	22819	22824	22830	22835	22840	22845	22851	8	4
.359	22856	22861	22867	22872	22877	22882	22888	22893	22898	22903	9	5
.360	22909	22914	22919	22925	22930	22935	22940	22946	22951	22956		
.361	22961	22967	22972	22977	22983	22988	22993	22999	23004	23009	1	1
.362	23014	23020	23025	23030	23036	23041	23046	23052	23057	23062	2	1
.363	23067	23073	23078	23083	23089	23094	23099	23105	23110	23115	3	2
.364	23121	23126	23131	23137	23142	23147	23153	23158	23163	23169	4	2
.365	23174	23179	23185	23190	23195	23201	23206	23211	23217	23222	5	3
.366	23227	23233	23238	23243	23249	23254	23259	23265	23270	23276	6	3
.367	23281	23286	23292	23297	23302	23308	23313	23318	23324	23329	7	4
.368	23335	23340	23345	23351	23356	23361	23367	23372	23378	23383	8	4
.369	23388	23394	23399	23405	23410	23415	23421	23426	23432	23437	9	5
.370	23442	23448	23453	23458	23464	23469	23475	23480	23486	23491		
.371	23496	23502	23507	23513	23518	23523	23529	23534	23540	23545	1	1
.372	23550	23556	23561	23567	23572	23578	23583	23588	23594	23599	2	1
.373	23605	23610	23616	23621	23627	23632	23637	23643	23648	23654	3	2
.374	23659	23665	23670	23676	23681	23686	23692	23697	23703	23708	4	2
.375	23714	23719	23725	23730	23736	23741	23747	23752	23757	23763	5	3
.376	23768	23774	23779	23785	23790	23796	23801	23807	23812	23818	6	3
.377	23823	23829	23834	23840	23845	23851	23856	23862	23867	23873	7	4
.378	23878	23884	23889	23895	23900	23906	23911	23917	23922	23928	8	4
.379	23933	23939	23944	23950	23955	23961	23966	23972	23977	23983	9	5
.380	23988	23994	23999	24005	24010	24016	24021	24027	24033	24038		
.381	24044	24049	24055	24060	24066	24071	24077	24082	24088	24094	1	1
.382	24099	24105	24110	24116	24121	24127	24132	24138	24143	24149	2	1
.383	24155	24160	24166	24171	24177	24182	24188	24194	24199	24205	3	2
.384	24210	24216	24221	24227	24233	24238	24244	24249	24255	24261	4	2
.385	24266	24272	24277	24283	24288	24294	24300	24305	24311	24316	5	3
.386	24322	24328	24333	24339	24344	24350	24356	24361	24367	24373	6	3
.387	24378	24384	24389	24395	24401	24406	24412	24417	24423	24429	7	4
.388	24434	24440	24446	24451	24457	24462	24468	24474	24479	24485	8	4
.389	24491	24496	24502	24508	24513	24519	24524	24530	24536	24541	9	5
.390	24547	24553	24558	24564	24570	24575	24581	24587	24592	24598		
.391	24604	24609	24615	24621	24626	24632	24638	24643	24649	24655	1	1
.392	24660	24666	24672	24677	24683	24689	24694	24700	24706	24712	2	1
.393	24717	24723	24729	24734	24740	24746	24751	24757	24763	24769	3	2
.394	24774	24780	24786	24791	24797	24803	24808	24814	24820	24826	4	2
.395	24831	24837	24843	24848	24854	24860	24866	24871	24877	24883	5	3
.396	24889	24894	24900	24906	24912	24917	24923	24929	24934	24940	6	3
.397	24946	24952	24957	24963	24969	24975	24980	24986	24992	24998	7	4
.398	25003	25009	25015	25021	25026	25032	25038	25044	25050	25055	8	5
.399	25061	25067	25073	25078	25084	25090	25096	25102	25107	25113	9	5
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.400	25119	25125	25130	25136	25142	25148	25154	25159	25165	25171		
.401	25177	25183	25188	25194	25200	25206	25212	25217	25223	25229	1	1
.402	25235	25241	25246	25252	25258	25264	25270	25276	25281	25287	2	1
.403	25293	25299	25305	25310	25316	25322	25328	25334	25340	25345	3	2
.404	25351	25357	25363	25369	25375	25380	25386	25392	25398	25404	4	2
.405	25410	25416	25421	25427	25433	25439	25445	25451	25457	25462	5	3
.406	25468	25474	25480	25486	25492	25498	25504	25509	25515	25521	6	4
.407	25527	25533	25539	25545	25551	25556	25562	25568	25574	25580	7	4
.408	25586	25592	25598	25604	25609	25615	25621	25627	25633	25639	8	5
.409	25645	25651	25657	25663	25668	25674	25680	25686	25692	25698	9	5
.410	25704	25710	25716	25722	25728	25734	25739	25745	25751	25757		
.411	25763	25769	25775	25781	25787	25793	25799	25805	25811	25817	1	1
.412	25823	25829	25834	25840	25846	25852	25858	25864	25870	25876	2	1
.413	25882	25888	25894	25900	25906	25912	25918	25924	25930	25936	3	2
.414	25942	25948	25954	25960	25966	25972	25978	25984	25990	25996	4	2
.415	26002	26008	26014	26020	26026	26032	26038	26044	26050	26056	5	3
.416	26062	26068	26074	26080	26086	26092	26098	26104	26110	26116	6	4
.417	26122	26128	26134	26140	26146	26152	26158	26164	26170	26176	7	4
.418	26182	26188	26194	26200	26206	26212	26218	26224	26230	26236	8	5
.419	26242	26248	26254	26260	26266	26272	26278	26285	26291	26297	9	5
.420	26303	26309	26315	26321	26327	26333	26339	26345	26351	26357		
.421	26363	26369	26375	26382	26388	26394	26400	26406	26412	26418	1	1
.422	26424	26430	26436	26442	26448	26455	26461	26467	26473	26479	2	1
.423	26485	26491	26497	26503	26509	26516	26522	26528	26534	26540	3	2
.424	26546	26552	26558	26564	26571	26577	26583	26589	26595	26601	4	2
.425	26607	26613	26620	26626	26632	26638	26644	26650	26656	26662	5	3
.426	26669	26675	26681	26687	26693	26699	26705	26712	26718	26724	6	4
.427	26730	26736	26742	26749	26755	26761	26767	26773	26779	26786	7	4
.428	26792	26798	26804	26810	26816	26823	26829	26835	26841	26847	8	5
.429	26853	26860	26866	26872	26878	26884	26891	26897	26903	26909	9	6
.430	26915	26922	26928	26934	26940	26946	26953	26959	26965	26971		
.431	26977	26984	26990	26996	27002	27008	27015	27021	27027	27033	1	1
.432	27040	27046	27052	27058	27064	27071	27077	27083	27089	27096	2	1
.433	27102	27108	27114	27121	27127	27133	27139	27146	27152	27158	3	2
.434	27164	27171	27177	27183	27189	27196	27202	27208	27214	27221	4	3
.435	27227	27233	27240	27246	27252	27258	27265	27271	27277	27283	5	3
.436	27290	27296	27302	27309	27315	27321	27328	27334	27340	27346	6	4
.437	27353	27359	27365	27372	27378	27384	27391	27397	27403	27409	7	4
.438	27416	27422	27428	27435	27441	27447	27454	27460	27466	27473	8	5
.439	27479	27485	27492	27498	27504	27511	27517	27523	27530	27536	9	6
.440	27542	27549	27555	27561	27568	27574	27580	27587	27593	27599		
.441	27606	27612	27618	27625	27631	27638	27644	27650	27657	27663	1	1
.442	27669	27676	27682	27689	27695	27701	27708	27714	27720	27727	2	1
.443	27733	27740	27746	27752	27759	27765	27772	27778	27784	27791	3	2
.444	27797	27804	27810	27816	27823	27829	27836	27842	27848	27855	4	3
.445	27861	27868	27874	27880	27887	27893	27900	27906	27913	27919	5	3
.446	27925	27932	27938	27945	27951	27958	27964	27970	27977	27983	6	4
.447	27990	27996	28003	28009	28016	28022	28029	28035	28041	28048	7	4
.448	28054	28061	28067	28074	28080	28087	28093	28100	28106	28113	8	5
.449	28119	28125	28132	28138	28145	28151	28158	28164	28171	28177	9	6
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *243

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.450	28184	28190	28197	28203	28210	28216	28223	28229	28236	28242		
.451	28249	28255	28262	28268	28275	28281	28288	28294	28301	28307	1	1
.452	28314	28320	28327	28333	28340	28347	28353	28360	28366	28373	2	1
.453	28379	28386	28392	28399	28405	28412	28418	28425	28432	28438	3	2
.454	28445	28451	28458	28464	28471	28477	28484	28490	28497	28504	4	3
.455	28510	28517	28523	28530	28536	28543	28550	28556	28563	28569	5	3
.456	28576	28582	28589	28596	28602	28609	28615	28622	28629	28635	6	4
.457	28642	28648	28655	28662	28668	28675	28681	28688	28695	28701	7	5
.458	28708	28714	28721	28728	28734	28741	28747	28754	28761	28767	8	5
.459	28774	28781	28787	28794	28800	28807	28814	28820	28827	28834	9	6
.460	28840	28847	28854	28860	28867	28874	28880	28887	28893	28900		
.461	28907	28913	28920	28927	28933	28940	28947	28953	28960	28967	1	1
.462	28973	28980	28987	28993	29000	29007	29013	29020	29027	29034	2	1
.463	29040	29047	29054	29060	29067	29074	29080	29087	29094	29100	3	2
.464	29107	29114	29121	29127	29134	29141	29147	29154	29161	29168	4	3
.465	29174	29181	29188	29194	29201	29208	29215	29221	29228	29235	5	3
.466	29242	29248	29255	29262	29268	29275	29282	29289	29295	29302	6	4
.467	29309	29316	29322	29329	29336	29343	29349	29356	29363	29370	7	5
.468	29376	29383	29390	29397	29404	29410	29417	29424	29431	29437	8	5
.469	29444	29451	29458	29465	29471	29478	29485	29492	29499	29505	9	6
.470	29512	29519	29526	29532	29539	29546	29553	29560	29567	29573		
.471	29580	29587	29594	29601	29607	29614	29621	29628	29635	29641	1	1
.472	29648	29655	29662	29669	29676	29682	29689	29696	29703	29710	2	1
.473	29717	29724	29730	29737	29744	29751	29758	29765	29771	29778	3	2
.474	29785	29792	29799	29806	29813	29819	29826	29833	29840	29847	4	3
.475	29854	29861	29868	29874	29881	29888	29895	29902	29909	29916	5	3
.476	29923	29930	29936	29943	29950	29957	29964	29971	29978	29985	6	4
.477	29992	29999	30005	30012	30019	30026	30033	30040	30047	30054	7	5
.478	30061	30068	30075	30082	30088	30095	30102	30109	30116	30123	8	5
.479	30130	30137	30144	30151	30158	30165	30172	30179	30186	30193	9	6
.480	30200	30206	30213	30220	30227	30234	30241	30248	30255	30262		
.481	30269	30276	30283	30290	30297	30304	30311	30318	30325	30332	1	1
.482	30339	30346	30353	30360	30367	30374	30381	30388	30395	30402	2	1
.483	30409	30416	30423	30430	30437	30444	30451	30458	30465	30472	3	2
.484	30479	30486	30493	30500	30507	30514	30521	30528	30535	30542	4	3
.485	30549	30556	30563	30570	30577	30584	30591	30598	30606	30613	5	4
.486	30620	30627	30634	30641	30648	30655	30662	30669	30676	30683	6	4
.487	30690	30697	30704	30711	30718	30726	30733	30740	30747	30754	7	5
.488	30761	30768	30775	30782	30789	30796	30803	30811	30818	30825	8	6
.489	30832	30839	30846	30853	30860	30867	30875	30882	30889	30896	9	6
.490	30903	30910	30917	30924	30931	30939	30946	30953	30960	30967		
.491	30974	30981	30988	30996	31003	31010	31017	31024	31031	31038	1	1
.492	31046	31053	31060	31067	31074	31081	31089	31096	31103	31110	2	1
.493	31117	31124	31131	31139	31146	31153	31160	31167	31175	31182	3	2
.494	31189	31196	31203	31210	31218	31225	31232	31239	31246	31254	4	3
.495	31261	31268	31275	31282	31290	31297	31304	31311	31318	31326	5	4
.496	31333	31340	31347	31355	31362	31369	31376	31383	31391	31398	6	4
.497	31405	31412	31420	31427	31434	31441	31449	31456	31463	31470	7	5
.498	31477	31485	31492	31499	31506	31514	31521	31528	31536	31543	8	6
.499	31550	31557	31565	31572	31579	31586	31594	31601	31608	31615	9	6
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P.	P.
.500	31623	31630	31637	31645	31652	31659	31666	31674	31681	31688		
.501	31696	31703	31710	31718	31725	31732	31739	31747	31754	31761	1	1
.502	31769	31776	31783	31791	31798	31805	31813	31820	31827	31835	2	1
.503	31842	31849	31857	31864	31871	31879	31886	31893	31901	31908	3	2
.504	31915	31923	31930	31937	31945	31952	31960	31967	31974	31982	4	3
.505	31989	31996	32004	32011	32018	32026	32033	32041	32048	32055	5	4
.506	32063	32070	32077	32085	32092	32100	32107	32114	32122	32129	6	4
.507	32137	32144	32151	32159	32166	32174	32181	32188	32196	32203	7	5
.508	32211	32218	32226	32233	32240	32248	32255	32263	32270	32278	8	6
.509	32285	32292	32300	32307	32315	32322	32330	32337	32344	32352	9	7
.510	32359	32367	32374	32382	32389	32397	32404	32412	32419	32426		
.511	32434	32441	32449	32456	32464	32471	32479	32486	32494	32501	1	1
.512	32509	32516	32524	32531	32539	32546	32554	32561	32569	32576	2	2
.513	32584	32591	32599	32606	32614	32621	32629	32636	32644	32651	3	2
.514	32659	32666	32674	32681	32689	32696	32704	32711	32719	32727	4	3
.515	32734	32742	32749	32757	32764	32772	32779	32787	32794	32802	5	4
.516	32810	32817	32825	32832	32840	32847	32855	32862	32870	32878	6	5
.517	32885	32893	32900	32908	32915	32923	32931	32938	32946	32953	7	5
.518	32961	32969	32976	32984	32991	32999	33007	33014	33022	33029	8	6
.519	33037	33045	33052	33060	33067	33075	33083	33090	33098	33105	9	7
.520	33113	33121	33128	33136	33144	33151	33159	33167	33174	33182		
.521	33189	33197	33205	33212	33220	33228	33235	33243	33251	33258	1	1
.522	33266	33274	33281	33289	33297	33304	33312	33320	33327	33335	2	2
.523	33343	33350	33358	33366	33373	33381	33389	33396	33404	33412	3	2
.524	33420	33427	33435	33443	33450	33458	33466	33473	33481	33489	4	3
.525	33497	33504	33512	33520	33527	33535	33543	33551	33558	33566	5	4
.526	33574	33581	33589	33597	33605	33612	33620	33628	33636	33643	6	5
.527	33651	33659	33667	33674	33682	33690	33698	33705	33713	33721	7	5
.528	33729	33736	33744	33752	33760	33768	33775	33783	33791	33799	8	6
.529	33806	33814	33822	33830	33838	33845	33853	33861	33869	33877	9	7
.530	33884	33892	33900	33908	33916	33923	33931	33939	33947	33955		
.531	33963	33970	33978	33986	33994	34002	34009	34017	34025	34033	1	1
.532	34041	34049	34056	34064	34072	34080	34088	34096	34104	34111	2	2
.533	34119	34127	34135	34143	34151	34159	34166	34174	34182	34190	3	2
.534	34198	34206	34214	34222	34229	34237	34245	34253	34261	34269	4	3
.535	34277	34285	34293	34300	34308	34316	34324	34332	34340	34348	5	4
.536	34356	34364	34372	34380	34387	34395	34403	34411	34419	34427	6	5
.537	34435	34443	34451	34459	34467	34475	34483	34491	34498	34506	7	6
.538	34514	34522	34530	34538	34546	34554	34562	34570	34578	34586	8	6
.539	34594	34602	34610	34618	34626	34634	34642	34650	34658	34666	9	7
.540	34674	34682	34690	34698	34706	34714	34722	34730	34738	34746		
.541	34754	34762	34770	34778	34786	34794	34802	34810	34818	34826	1	1
.542	34834	34842	34850	34858	34866	34874	34882	34890	34898	34906	2	2
.543	34914	34922	34930	34938	34946	34954	34962	34970	34978	34986	3	2
.544	34995	35003	35011	35019	35027	35035	35043	35051	35059	35067	4	3
.545	35075	35083	35091	35099	35108	35116	35124	35132	35140	35148	5	4
.546	35156	35164	35172	35180	35188	35197	35205	35213	35221	35229	6	5
.547	35237	35245	35253	35261	35270	35278	35286	35294	35302	35310	7	6
.548	35318	35326	35335	35343	35351	35359	35367	35375	35383	35392	8	6
.549	35400	35408	35416	35424	35432	35441	35449	35457	35465	35473	9	7
Log	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

*245

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.550	35481	35490	35498	35506	35514	35522	35530	35539	35547	35555		
.551	35563	35571	35580	35588	35596	35604	35612	35620	35629	35637	1	1
.552	35645	35653	35662	35670	35678	35686	35694	35703	35711	35719	2	2
.553	35727	35736	35744	35752	35760	35768	35777	35785	35793	35801	3	2
.554	35810	35818	35826	35834	35843	35851	35859	35867	35876	35884	4	3
.555	35892	35900	35909	35917	35925	35934	35942	35950	35958	35967	5	4
.556	35975	35983	35992	36000	36008	36016	36025	36033	36041	36050	6	5
.557	36058	36066	36074	36083	36091	36099	36108	36116	36124	36133	7	6
.558	36141	36149	36158	36166	36174	36183	36191	36199	36208	36216	8	7
.559	36224	36233	36241	36249	36258	36266	36274	36283	36291	36299	9	7
.560	36308	36316	36325	36333	36341	36350	36358	36366	36375	36383		
.561	36392	36400	36408	36417	36425	36433	36442	36450	36459	36467	1	1
.562	36475	36484	36492	36501	36509	36517	36526	36534	36543	36551	2	2
.563	36559	36568	36576	36585	36593	36602	36610	36618	36627	36635	3	3
.564	36644	36652	36661	36669	36678	36686	36694	36703	36711	36720	4	3
.565	36728	36737	36745	36754	36762	36771	36779	36787	36796	36804	5	4
.566	36813	36821	36830	36838	36847	36855	36864	36872	36881	36889	6	5
.567	36898	36906	36915	36923	36932	36940	36949	36957	36966	36974	7	6
.568	36983	36991	37000	37008	37017	37025	37034	37042	37051	37060	8	7
.569	37068	37077	37085	37094	37102	37111	37119	37128	37136	37145	9	8
.570	37154	37162	37171	37179	37188	37196	37205	37213	37222	37231		
.571	37239	37248	37256	37265	37273	37282	37291	37299	37308	37316	1	1
.572	37325	37334	37342	37351	37359	37368	37377	37385	37394	37402	2	2
.573	37411	37420	37428	37437	37446	37454	37463	37471	37480	37489	3	3
.574	37497	37506	37515	37523	37532	37540	37549	37558	37566	37575	4	3
.575	37584	37592	37601	37610	37618	37627	37636	37644	37653	37662	5	4
.576	37670	37679	37688	37696	37705	37714	37722	37731	37740	37749	6	5
.577	37757	37766	37775	37783	37792	37801	37809	37818	37827	37836	7	6
.578	37844	37853	37862	37870	37879	37888	37897	37905	37914	37923	8	7
.579	37931	37940	37949	37958	37966	37975	37984	37993	38001	38010	9	8
.580	38019	38028	38036	38045	38054	38063	38072	38080	38089	38098		
.581	38107	38115	38124	38133	38142	38150	38159	38168	38177	38186	1	1
.582	38194	38203	38212	38221	38230	38238	38247	38256	38265	38274	2	2
.583	38282	38291	38300	38309	38318	38327	38335	38344	38353	38362	3	3
.584	38371	38380	38388	38397	38406	38415	38424	38433	38441	38450	4	4
.585	38459	38468	38477	38486	38495	38503	38512	38521	38530	38539	5	4
.586	38548	38557	38566	38574	38583	38592	38601	38610	38619	38628	6	5
.587	38637	38646	38654	38663	38672	38681	38690	38699	38708	38717	7	6
.588	38726	38735	38744	38753	38761	38770	38779	38788	38797	38806	8	7
.589	38815	38824	38833	38842	38851	38860	38869	38878	38887	38896	9	8
.590	38905	38913	38922	38931	38940	38949	38958	38967	38976	38985		
.591	38994	39003	39012	39021	39030	39039	39048	39057	39066	39075	1	1
.592	39084	39093	39102	39111	39120	39129	39138	39147	39156	39165	2	2
.593	39174	39183	39192	39201	39210	39219	39228	39237	39246	39255	3	3
.594	39264	39274	39283	39292	39301	39310	39319	39328	39337	39346	4	4
.595	39355	39364	39373	39382	39391	39400	39409	39418	39428	39437	5	5
.596	39446	39455	39464	39473	39482	39491	39500	39509	39518	39528	6	5
.597	39537	39546	39555	39564	39573	39582	39591	39600	39610	39619	7	6
.598	39628	39637	39646	39655	39664	39673	39683	39692	39701	39710	8	7
.599	39719	39728	39737	39747	39756	39765	39774	39783	39792	39802	9	8
Log	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.600	39811	39820	39829	39838	39847	39857	39866	39875	39884	39893		
.601	39902	39912	39921	39930	39939	39948	39958	39967	39976	39985	1	1
.602	39994	40004	40013	40022	40031	40041	40050	40059	40068	40077	2	2
.603	40087	40096	40105	40114	40124	40133	40142	40151	40161	40170	3	3
.604	40179	40188	40198	40207	40216	40225	40235	40244	40253	40262	4	4
.605	40272	40281	40290	40300	40309	40318	40327	40337	40346	40355	5	5
.606	40365	40374	40383	40392	40402	40411	40420	40430	40439	40448	6	6
.607	40458	40467	40476	40486	40495	40504	40514	40523	40532	40542	7	6
.608	40551	40560	40570	40579	40588	40598	40607	40616	40626	40635	8	7
.609	40644	40654	40663	40672	40682	40691	40701	40710	40719	40729	9	8
.610	40738	40747	40757	40766	40776	40785	40794	40804	40813	40823		
.611	40832	40841	40851	40860	40870	40879	40888	40898	40907	40917	1	1
.612	40926	40935	40945	40954	40964	40973	40983	40992	41002	41011	2	2
.613	41020	41030	41039	41049	41058	41068	41077	41087	41096	41106	3	3
.614	41115	41124	41134	41143	41153	41162	41172	41181	41191	41200	4	4
.615	41210	41219	41229	41238	41248	41257	41267	41276	41286	41295	5	5
.616	41305	41314	41324	41333	41343	41352	41362	41371	41381	41390	6	6
.617	41400	41410	41419	41429	41438	41448	41457	41467	41476	41486	7	7
.618	41495	41505	41515	41524	41534	41543	41553	41562	41572	41581	8	8
.619	41591	41601	41610	41620	41629	41639	41649	41658	41668	41677	9	9
.620	41687	41697	41706	41716	41725	41735	41745	41754	41764	41773		
.621	41783	41793	41802	41812	41822	41831	41841	41850	41860	41870	1	1
.622	41879	41889	41899	41908	41918	41928	41937	41947	41957	41966	2	2
.623	41976	41986	41995	42005	42015	42024	42034	42044	42053	42063	3	3
.624	42073	42082	42092	42102	42111	42121	42131	42141	42150	42160	4	4
.625	42170	42179	42189	42199	42209	42218	42228	42238	42247	42257	5	5
.626	42267	42277	42286	42296	42306	42316	42325	42335	42345	42355	6	6
.627	42364	42374	42384	42394	42403	42413	42423	42433	42442	42452	7	7
.628	42462	42472	42482	42491	42501	42511	42521	42530	42540	42550	8	8
.629	42560	42570	42579	42589	42599	42609	42619	42628	42638	42648	9	9
.630	42658	42668	42678	42687	42697	42707	42717	42727	42737	42746		
.631	42756	42766	42776	42786	42796	42806	42815	42825	42835	42845	1	1
.632	42855	42865	42875	42884	42894	42904	42914	42924	42934	42944	2	2
.633	42954	42964	42973	42983	42993	43003	43013	43023	43033	43043	3	3
.634	43053	43063	43072	43082	43092	43102	43112	43122	43132	43142	4	4
.635	43152	43162	43172	43182	43192	43202	43212	43222	43231	43241	5	5
.636	43251	43261	43271	43281	43291	43301	43311	43321	43331	43341	6	6
.637	43351	43361	43371	43381	43391	43401	43411	43421	43431	43441	7	7
.638	43451	43461	43471	43481	43491	43501	43511	43521	43531	43541	8	8
.639	43551	43561	43571	43581	43591	43601	43611	43621	43631	43642	9	9
.640	43652	43662	43672	43682	43692	43702	43712	43722	43732	43742		
.641	43752	43762	43772	43782	43793	43803	43813	43823	43833	43843	1	1
.642	43853	43863	43873	43883	43893	43904	43914	43924	43934	43944	2	2
.643	43954	43964	43974	43985	43995	44005	44015	44025	44035	44045	3	3
.644	44055	44066	44076	44086	44096	44106	44116	44127	44137	44147	4	4
.645	44157	44167	44177	44188	44198	44208	44218	44228	44238	44249	5	5
.646	44259	44269	44279	44289	44300	44310	44320	44330	44340	44351	6	6
.647	44361	44371	44381	44392	44402	44412	44422	44432	44443	44453	7	7
.648	44463	44473	44484	44494	44504	44514	44525	44535	44545	44555	8	8
.649	44566	44576	44586	44596	44607	44617	44627	44638	44648	44658	9	9
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *247

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.650	44668	44679	44689	44699	44710	44720	44730	44740	44751	44761		
.651	44771	44782	44792	44802	44813	44823	44833	44844	44854	44864	1	1
.652	44875	44885	44895	44906	44916	44926	44937	44947	44957	44968	2	2
.653	44978	44988	44999	45009	45019	45030	45040	45051	45061	45071	3	3
.654	45082	45092	45102	45113	45123	45134	45144	45154	45165	45175	4	4
.655	45186	45196	45206	45217	45227	45238	45248	45258	45269	45279	5	5
.656	45290	45300	45311	45321	45331	45342	45352	45363	45373	45384	6	6
.657	45394	45405	45415	45426	45436	45446	45457	45467	45478	45488	7	7
.658	45499	45509	45520	45530	45541	45551	45562	45572	45583	45593	8	8
.659	45604	45614	45625	45635	45646	45656	45667	45677	45688	45698	9	9
.660	45709	45719	45730	45740	45751	45761	45772	45783	45793	45804		
.661	45814	45825	45835	45846	45856	45867	45878	45888	45899	45909	1	.1
.662	45920	45930	45941	45952	45962	45973	45983	45994	46004	46015	2	2
.663	46026	46036	46047	46057	46068	46079	46089	46100	46111	46121	3	3
.664	46132	46142	46153	46164	46174	46185	46196	46206	46217	46227	4	4
.665	46238	46249	46259	46270	46281	46291	46302	46313	46323	46334	5	5
.666	46345	46355	46366	46377	46387	46398	46409	46419	46430	46441	6	6
.667	46452	46462	46473	46484	46494	46505	46516	46526	46537	46548	7	7
.668	46559	46569	46580	46591	46602	46612	46623	46634	46644	46655	8	9
.669	46666	46677	46687	46698	46709	46720	46730	46741	46752	46763	9	10
.670	46774	46784	46795	46806	46817	46827	46838	46849	46860	46871		
.671	46881	46892	46903	46914	46925	46935	46946	46957	46968	46979	1	1
.672	46989	47000	47011	47022	47033	47044	47054	47065	47076	47087	2	2
.673	47098	47109	47119	47130	47141	47152	47163	47174	47185	47195	3	3
.674	47206	47217	47228	47239	47250	47261	47272	47282	47293	47304	4	4
.675	47315	47326	47337	47348	47359	47370	47381	47391	47402	47413	5	5
.676	47424	47435	47446	47457	47468	47479	47490	47501	47512	47523	6	7
.677	47534	47544	47555	47566	47577	47588	47599	47610	47621	47632	7	8
.678	47643	47654	47665	47676	47687	47698	47709	47720	47731	47742	8	9
.679	47753	47764	47775	47786	47797	47808	47819	47830	47841	47852	9	10
.680	47863	47874	47885	47896	47907	47918	47929	47940	47951	47962		
.681	47973	47984	47995	48006	48018	48029	48040	48051	48062	48073	1	1
.682	48084	48095	48106	48117	48128	48139	48150	48161	48173	48184	2	2
.683	48195	48206	48217	48228	48239	48250	48261	48273	48284	48295	3	3
.684	48306	48317	48328	48339	48350	48362	48373	48384	48395	48406	4	4
.685	48417	48428	48440	48451	48462	48473	48484	48495	48507	48518	5	6
.686	48529	48540	48551	48562	48574	48585	48596	48607	48618	48630	6	7
.687	48641	48652	48663	48674	48686	48697	48708	48719	48730	48742	7	8
.688	48753	48764	48775	48787	48798	48809	48820	48831	48843	48854	8	9
.689	48865	48876	48888	48899	48910	48922	48933	48944	48955	48967	9	10
.690	48978	48989	49000	49012	49023	49034	49046	49057	49068	49079		
.691	49091	49102	49113	49125	49136	49147	49159	49170	49181	49193	1	1
.692	49204	49215	49227	49238	49249	49261	49272	49283	49295	49306	2	2
.693	49317	49329	49340	49351	49363	49374	49386	49397	49408	49420	3	3
.694	49431	49442	49454	49465	49477	49488	49499	49511	49522	49534	4	5
.695	49545	49556	49568	49579	49591	49602	49614	49625	49636	49648	5	6
.696	49659	49671	49682	49694	49705	49716	49728	49739	49751	49762	6	7
.697	49774	49785	49797	49808	49820	49831	49843	49854	49865	49877	7	8
.698	49888	49900	49911	49923	49934	49946	49957	49969	49980	49992	8	9
.699	50003	50015	50026	50038	50050	50061	50073	50084	50096	50107	9	10
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.700	50119	50130	50142	50153	50165	50176	50188	50200	50211	50223		
.701	50234	50246	50257	50269	50281	50292	50304	50315	50327	50338	1	1
.702	50350	50362	50373	50385	50396	50408	50420	50431	50443	50455	2	2
.703	50466	50478	50489	50501	50513	50524	50536	50548	50559	50571	3	4
.704	50582	50594	50606	50617	50629	50641	50652	50664	50676	50687	4	5
.705	50699	50711	50722	50734	50746	50757	50769	50781	50793	50804	5	6
.706	50816	50828	50839	50851	50863	50874	50886	50898	50910	50921	6	7
.707	50933	50945	50957	50968	50980	50992	51004	51015	51027	51039	7	8
.708	51050	51062	51074	51086	51098	51109	51121	51133	51145	51156	8	9
.709	51168	51180	51192	51204	51215	51227	51239	51251	51263	51274	9	11
.710	51286	51298	51310	51322	51333	51345	51357	51369	51381	51393		
.711	51404	51416	51428	51440	51452	51464	51475	51487	51499	51511	1	1
.712	51523	51535	51547	51558	51570	51582	51594	51606	51618	51630	2	2
.713	51642	51654	51665	51677	51689	51701	51713	51725	51737	51749	3	4
.714	51761	51773	51785	51796	51808	51820	51832	51844	51856	51868	4	5
.715	51880	51892	51904	51916	51928	51940	51952	51964	51976	51988	5	6
.716	52000	52012	52024	52036	52048	52060	52071	52083	52095	52107	6	7
.717	52119	52131	52143	52155	52167	52180	52192	52204	52216	52228	7	8
.718	52240	52252	52264	52276	52288	52300	52312	52324	52336	52348	8	10
.719	52360	52372	52384	52396	52408	52420	52432	52445	52457	52469	9	11
.720	52481	52493	52505	52517	52529	52541	52553	52565	52578	52590		
.721	52602	52614	52626	52638	52650	52662	52674	52687	52699	52711	1	1
.722	52723	52735	52747	52759	52772	52784	52796	52808	52820	52832	2	2
.723	52845	52857	52869	52881	52893	52905	52918	52930	52942	52954	3	4
.724	52966	52979	52991	53003	53015	53027	53040	53052	53064	53076	4	5
.725	53088	53101	53113	53125	53137	53150	53162	53174	53186	53199	5	6
.726	53211	53223	53235	53248	53260	53272	53284	53297	53309	53321	6	7
.727	53333	53346	53358	53370	53383	53395	53407	53420	53432	53444	7	9
.728	53456	53469	53481	53493	53506	53518	53530	53543	53555	53567	8	10
.729	53580	53592	53604	53617	53629	53641	53654	53666	53678	53691	9	11
.730	53703	53716	53728	53740	53753	53765	53777	53790	53802	53815		
.731	53827	53839	53852	53864	53877	53889	53901	53914	53926	53939	1	1
.732	53951	53963	53976	53988	54001	54013	54026	54038	54051	54063	2	3
.733	54075	54088	54100	54113	54125	54138	54150	54163	54175	54188	3	4
.734	54200	54213	54225	54238	54250	54263	54275	54288	54300	54313	4	5
.735	54325	54338	54350	54363	54375	54388	54400	54413	54425	54438	5	6
.736	54450	54463	54475	54488	54500	54513	54526	54538	54551	54563	6	8
.737	54576	54588	54601	54613	54626	54639	54651	54664	54676	54689	7	9
.738	54702	54714	54727	54739	54752	54765	54777	54790	54802	54815	8	10
.739	54828	54840	54853	54866	54878	54891	54903	54916	54929	54941	9	11
.740	54954	54967	54979	54992	55005	55017	55030	55043	55055	55068		
.741	55081	55093	55106	55119	55132	55144	55157	55170	55182	55195	1	1
.742	55208	55220	55233	55246	55259	55271	55284	55297	55310	55322	2	3
.743	55335	55348	55360	55373	55386	55399	55412	55424	55437	55450	3	4
.744	55463	55475	55488	55501	55514	55526	55539	55552	55565	55578	4	5
.745	55590	55603	55616	55629	55642	55654	55667	55680	55693	55706	5	6
.746	55719	55731	55744	55757	55770	55783	55796	55808	55821	55834	6	8
.747	55847	55860	55873	55886	55898	55911	55924	55937	55950	55963	7	9
.748	55976	55989	56002	56014	56027	56040	56053	56066	56079	56092	8	10
.749	56105	56118	56131	56144	56156	56169	56182	56195	56208	56221	9	12
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

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ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.750	56234	56247	56260	56273	56286	56299	56312	56325	56338	56351		
.751	56364	56377	56390	56403	56416	56429	56442	56455	56468	56481	1	1
.752	56494	56507	56520	56533	56546	56559	56572	56585	56598	56611	2	3
.753	56624	56637	56650	56663	56676	56689	56702	56715	56728	56741	3	4
.754	56754	56768	56781	56794	56807	56820	56833	56846	56859	56872	4	5
.755	56885	56898	56911	56925	56938	56951	56964	56977	56990	57003	5	7
.756	57016	57030	57043	57056	57069	57082	57095	57108	57122	57135	6	8
.757	57148	57161	57174	57187	57201	57214	57227	57240	57253	57266	7	9
.758	57280	57293	57306	57319	57332	57346	57359	57372	57385	57398	8	10
.759	57412	57425	57438	57451	57465	57478	57491	57504	57517	57531	9	12
.760	57544	57557	57570	57584	57597	57610	57624	57637	57650	57663		
.761	57677	57690	57703	57717	57730	57743	57756	57770	57783	57796	1	1
.762	57810	57823	57836	57850	57863	57876	57890	57903	57916	57930	2	3
.763	57943	57956	57970	57983	57996	58010	58023	58036	58050	58063	3	4
.764	58076	58090	58103	58117	58130	58143	58157	58170	58184	58197	4	5
.765	58210	58224	58237	58251	58264	58277	58291	58304	58318	58331	5	7
.766	58345	58358	58371	58385	58398	58412	58425	58439	58452	58466	6	8
.767	58479	58492	58506	58519	58533	58546	58560	58573	58587	58600	7	9
.768	58614	58627	58641	58654	58668	58681	58695	58708	58722	58735	8	11
.769	58749	58762	58776	58790	58803	58817	58830	58844	58857	58871	9	12
.770	58884	58898	58911	58925	58939	58952	58966	58979	58993	59007		
.771	59020	59034	59047	59061	59074	59088	59102	59115	59129	59143	1	1
.772	59156	59170	59183	59197	59211	59224	59238	59252	59265	59279	2	3
.773	59293	59306	59320	59334	59347	59361	59375	59388	59402	59416	3	4
.774	59429	59443	59457	59470	59484	59498	59511	59525	59539	59553	4	5
.775	59566	59580	59594	59607	59621	59635	59649	59662	59676	59690	5	7
.776	59704	59717	59731	59745	59759	59772	59786	59800	59814	59827	6	8
.777	59841	59855	59869	59883	59896	59910	59924	59938	59951	59965	7	10
.778	59979	59993	60007	60021	60034	60048	60062	60076	60090	60104	8	11
.779	60117	60131	60145	60159	60173	60187	60200	60214	60228	60242	9	12
.780	60256	60270	60284	60298	60311	60325	60339	60353	60367	60381		
.781	60395	60409	60423	60437	60451	60464	60478	60492	60506	60520	1	1
.782	60534	60548	60562	60576	60590	60604	60618	60632	60646	60660	2	3
.783	60674	60688	60702	60716	60730	60744	60758	60772	60786	60799	3	4
.784	60814	60828	60842	60856	60870	60884	60898	60912	60926	60940	4	6
.785	60954	60968	60982	60996	61010	61024	61038	61052	61066	61080	5	7
.786	61094	61108	61122	61136	61150	61165	61179	61193	61207	61221	6	8
.787	61235	61249	61263	61277	61291	61306	61320	61334	61348	61362	7	10
.788	61376	61390	61404	61419	61433	61447	61461	61475	61489	61504	8	11
.789	61518	61532	61546	61560	61574	61589	61603	61617	61631	61645	9	13
.790	61660	61674	61688	61702	61716	61731	61745	61759	61773	61787		
.791	61802	61816	61830	61844	61859	61873	61887	61901	61916	61930	1	1
.792	61944	61958	61973	61987	62001	62015	62030	62044	62058	62073	2	3
.793	62087	62101	62116	62130	62144	62158	62173	62187	62201	62216	3	4
.794	62230	62244	62259	62273	62287	62302	62316	62330	62345	62359	4	6
.795	62373	62388	62402	62417	62431	62445	62460	62474	62488	62503	5	7
.796	62517	62532	62546	62560	62575	62589	62604	62618	62633	62647	6	9
.797	62661	62676	62690	62705	62719	62734	62748	62762	62777	62791	7	10
.798	62806	62820	62835	62849	62864	62878	62893	62907	62922	62936	8	11
.799	62951	62965	62980	62994	63009	63023	63038	63052	63067	63081	9	13
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.800	63096	63110	63125	63139	63154	63168	63183	63198	63212	63227		
.801	63241	63256	63270	63285	63299	63314	63329	63343	63358	63372	1	1
.802	63387	63402	63416	63431	63445	63460	63475	63489	63504	63518	2	3
.803	63533	63548	63562	63577	63592	63606	63621	63636	63650	63665	3	4
.804	63680	63694	63709	63724	63738	63753	63768	63782	63797	63812	4	6
.805	63826	63841	63856	63870	63885	63900	63915	63929	63944	63959	5	7
.806	63973	63988	64003	64018	64032	64047	64062	64077	64091	64106	6	9
.807	64121	64136	64150	64165	64180	64195	64210	64224	64239	64254	7	10
.808	64269	64284	64298	64313	64328	64343	64358	64372	64387	64402	8	12
.809	64417	64432	64447	64461	64476	64491	64506	64521	64536	64551	9	13
.810	64565	64580	64595	64610	64625	64640	64655	64670	64684	64699		
.811	64714	64729	64744	64759	64774	64789	64804	64819	64834	64849	1	2
.812	64863	64878	64893	64908	64923	64938	64953	64968	64983	64998	2	3
.813	65013	65028	65043	65058	65073	65088	65103	65118	65133	65148	3	5
.814	65163	65178	65193	65208	65223	65238	65253	65268	65283	65298	4	6
.815	65313	65328	65343	65358	65373	65388	65403	65418	65433	65449	5	8
.816	65464	65479	65494	65509	65524	65539	65554	65569	65584	65599	6	9
.817	65615	65630	65645	65660	65675	65690	65705	65720	65736	65751	7	11
.818	65766	65781	65796	65811	65826	65842	65857	65872	65887	65902	8	12
.819	65917	65933	65948	65963	65978	65993	66009	66024	66039	66054	9	14
.820	66069	66085	66100	66115	66130	66145	66161	66176	66191	66206		
.821	66222	66237	66252	66267	66283	66298	66313	66328	66344	66359	1	2
.822	66374	66390	66405	66420	66435	66451	66466	66481	66497	66512	2	3
.823	66527	66543	66558	66573	66589	66604	66619	66635	66650	66665	3	5
.824	66681	66696	66711	66727	66742	66757	66773	66788	66804	66819	4	6
.825	66834	66850	66865	66881	66896	66911	66927	66942	66958	66973	5	8
.826	66988	67004	67019	67035	67050	67066	67081	67097	67112	67127	6	9
.827	67143	67158	67174	67189	67205	67220	67236	67251	67267	67282	7	11
.828	67298	67313	67329	67344	67360	67375	67391	67406	67422	67437	8	12
.829	67453	67468	67484	67499	67515	67531	67546	67562	67577	67593	9	14
.830	67608	67624	67639	67655	67671	67686	67702	67717	67733	67749		
.831	67764	67780	67795	67811	67827	67842	67858	67873	67889	67905	1	2
.832	67920	67936	67952	67967	67983	67999	68014	68030	68046	68061	2	3
.833	68077	68093	68108	68124	68140	68155	68171	68187	68202	68218	3	5
.834	68234	68250	68265	68281	68297	68312	68328	68344	68360	68375	4	6
.835	68391	68407	68423	68438	68454	68470	68486	68501	68517	68533	5	8
.836	68549	68565	68580	68596	68612	68628	68644	68659	68675	68691	6	9
.837	68707	68723	68738	68754	68770	68786	68802	68818	68834	68849	7	11
.838	68865	68881	68897	68913	68929	68945	68960	68976	68992	69008	8	13
.839	69024	69040	69056	69072	69088	69103	69119	69135	69151	69167	9	14
.840	69183	69199	69215	69231	69247	69263	69279	69295	69311	69327		
.841	69343	69359	69375	69390	69406	69422	69438	69454	69470	69486	1	2
.842	69502	69518	69534	69550	69566	69582	69599	69615	69631	69647	2	3
.843	69663	69679	69695	69711	69727	69743	69759	69775	69791	69807	3	5
.844	69823	69839	69855	69871	69888	69904	69920	69936	69952	69968	4	6
.845	69984	70000	70016	70033	70049	70065	70081	70097	70113	70129	5	8
.846	70146	70162	70178	70194	70210	70226	70243	70259	70275	70291	6	10
.847	70307	70323	70340	70356	70372	70388	70404	70421	70437	70453	7	11
.848	70469	70486	70502	70518	70534	70550	70567	70583	70599	70615	8	13
.849	70632	70648	70664	70681	70697	70713	70729	70746	70762	70778	9	14
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *251

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P. P.	
.850	70795	70811	70827	70843	70860	70876	70892	70909	70925	70941		
.851	70958	70974	70990	71007	71023	71040	71056	71072	71089	71105	1	2
.852	71121	71138	71154	71170	71187	71203	71220	71236	71252	71269	2	3
.853	71285	71302	71318	71335	71351	71367	71384	71400	71417	71433	3	5
.854	71450	71466	71483	71499	71515	71532	71548	71565	71581	71598	4	7
.855	71614	71631	71647	71664	71680	71697	71713	71730	71746	71763	5	8
.856	71779	71796	71812	71829	71846	71862	71879	71895	71912	71928	6	10
.857	71945	71961	71978	71995	72011	72028	72044	72061	72078	72094	7	12
.858	72111	72127	72144	72161	72177	72194	72210	72227	72244	72260	8	13
.859	72277	72294	72310	72327	72344	72360	72377	72394	72410	72427	9	15
.860	72444	72460	72477	72494	72510	72527	72544	72560	72577	72594		
.861	72611	72627	72644	72661	72678	72694	72711	72728	72744	72761	1	2
.862	72778	72795	72812	72828	72845	72862	72879	72895	72912	72929	2	3
.863	72946	72963	72979	72996	73013	73030	73047	73063	73080	73097	3	5
.864	73114	73131	73148	73164	73181	73198	73215	73232	73249	73266	4	7
.865	73282	73299	73316	73333	73350	73367	73384	73401	73418	73434	5	8
.866	73451	73468	73485	73502	73519	73536	73553	73570	73587	73604	6	10
.867	73621	73638	73655	73672	73689	73706	73722	73739	73756	73773	7	12
.868	73790	73807	73824	73841	73858	73875	73892	73909	73926	73943	8	13
.869	73961	73978	73995	74012	74029	74046	74063	74080	74097	74114	9	15
.870	74131	74148	74165	74182	74199	74216	74234	74251	74268	74285		
.871	74302	74319	74336	74353	74370	74388	74405	74422	74439	74456	1	2
.872	74473	74490	74508	74525	74542	74559	74576	74593	74611	74628	2	3
.873	74645	74662	74679	74696	74714	74731	74748	74765	74783	74800	3	5
.874	74817	74834	74851	74869	74886	74903	74920	74938	74955	74972	4	7
.875	74989	75007	75024	75041	75059	75076	75093	75110	75128	75145	5	9
.876	75162	75180	75197	75214	75232	75249	75266	75284	75301	75318	6	10
.877	75336	75353	75370	75388	75405	75422	75440	75457	75474	75492	7	12
.878	75509	75527	75544	75561	75579	75596	75614	75631	75648	75666	8	14
.879	75683	75701	75718	75736	75753	75770	75788	75805	75823	75840	9	16
.880	75858	75875	75893	75910	75928	75945	75963	75980	75998	76015		
.881	76033	76050	76068	76085	76103	76120	76138	76155	76173	76190	1	2
.882	76208	76225	76243	76261	76278	76296	76313	76331	76348	76366	2	4
.883	76384	76401	76419	76436	76454	76472	76489	76507	76524	76542	3	5
.884	76560	76577	76595	76613	76630	76648	76666	76683	76701	76718	4	7
.885	76736	76754	76771	76789	76807	76825	76842	76860	76878	76895	5	9
.886	76913	76931	76948	76966	76984	77002	77019	77037	77055	77073	6	11
.887	77090	77108	77126	77144	77161	77179	77197	77215	77232	77250	7	12
.888	77268	77286	77304	77321	77339	77357	77375	77393	77411	77428	8	14
.889	77446	77464	77482	77500	77518	77535	77553	77571	77589	77607	9	16
.890	77625	77643	77660	77678	77696	77714	77732	77750	77768	77786		
.891	77804	77822	77839	77857	77875	77893	77911	77929	77947	77965	1	2
.892	77983	78001	78019	78037	78055	78073	78091	78109	78127	78145	2	4
.893	78163	78181	78199	78217	78235	78253	78271	78289	78307	78325	3	5
.894	78343	78361	78379	78397	78415	78433	78451	78469	78487	78505	4	7
.895	78524	78542	78560	78578	78596	78614	78632	78650	78668	78686	5	9
.896	78705	78723	78741	78759	78777	78795	78813	78832	78850	78868	6	11
.897	78886	78904	78922	78941	78959	78977	78995	79013	79031	79050	7	13
.898	79068	79086	79104	79122	79141	79159	79177	79195	79214	79232	8	14
.899	79250	79268	79287	79305	79323	79341	79360	79378	79396	79415	9	16
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII.

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9	P.P.	
.900	79433	79451	79469	79488	79506	79524	79543	79561	79579	79598		
.901	79616	79634	79653	79671	79689	79708	79726	79744	79763	79781	1	2
.902	79799	79818	79836	79855	79873	79891	79910	79928	79947	79965	2	4
.903	79983	80002	80020	80039	80057	80076	80094	80112	80131	80149	3	6
.904	80168	80186	80205	80223	80242	80260	80279	80297	80316	80334	4	7
.905	80353	80371	80390	80408	80427	80445	80464	80482	80501	80519	5	9
.906	80538	80556	80575	80593	80612	80631	80649	80668	80686	80705	6	11
.907	80724	80742	80761	80779	80798	80816	80835	80854	80872	80891	7	13
.908	80910	80928	80947	80965	80984	81003	81021	81040	81059	81077	8	15
.909	81096	81115	81133	81152	81171	81190	81208	81227	81246	81264	9	17
.910	81283	81302	81320	81339	81358	81377	81395	81414	81433	81452		
.911	81470	81489	81508	81527	81546	81564	81583	81602	81621	81639	1	2
.912	81658	81677	81696	81715	81733	81752	81771	81790	81809	81828	2	4
.913	81846	81865	81884	81903	81922	81941	81960	81979	81997	82016	3	6
.914	82035	82054	82073	82092	82111	82130	82149	82167	82186	82205	4	8
.915	82224	82243	82262	82281	82300	82319	82338	82357	82376	82395	5	9
.916	82414	82433	82452	82471	82490	82509	82528	82547	82566	82585	6	11
.917	82604	82623	82642	82661	82680	82699	82718	82737	82756	82775	7	13
.918	82794	82813	82832	82851	82871	82890	82909	82928	82947	82966	8	15
.919	82985	83004	83023	83042	83062	83081	83100	83119	83138	83157	9	17
.920	83176	83196	83215	83234	83253	83272	83291	83311	83330	83349		
.921	83368	83387	83407	83426	83445	83464	83483	83503	83522	83541	1	2
.922	83560	83580	83599	83618	83637	83657	83676	83695	83714	83734	2	4
.923	83753	83772	83792	83811	83830	83849	83869	83888	83907	83927	3	6
.924	83946	83965	83985	84004	84023	84043	84062	84081	84101	84120	4	8
.925	84140	84159	84178	84198	84217	84236	84256	84275	84295	84314	5	10
.926	84333	84353	84372	84392	84411	84431	84450	84470	84489	84508	6	12
.927	84528	84547	84567	84586	84606	84625	84645	84664	84684	84703	7	14
.928	84723	84742	84762	84781	84801	84820	84840	84859	84879	84898	8	16
.929	84918	84938	84957	84977	84996	85016	85035	85055	85075	85094	9	17
.930	85114	85133	85153	85173	85192	85212	85231	85251	85271	85290		
.931	85310	85330	85349	85369	85389	85408	85428	85448	85467	85487	1	2
.932	85507	85526	85546	85566	85585	85605	85625	85645	85664	85684	2	4
.933	85704	85724	85743	85763	85783	85803	85822	85842	85862	85882	3	6
.934	85901	85921	85941	85961	85981	86000	86020	86040	86060	86080	4	8
.935	86099	86119	86139	86159	86179	86199	86218	86238	86258	86278	5	10
.936	86298	86318	86338	86357	86377	86397	86417	86437	86457	86477	6	12
.937	86497	86517	86537	86557	86576	86596	86616	86636	86656	86676	7	14
.938	86696	86716	86736	86756	86776	86796	86816	86836	86856	86876	8	16
.939	86896	86916	86936	86956	86976	86996	87016	87036	87056	87076	9	18
.940	87096	87116	87136	87157	87177	87197	87217	87237	87257	87277		
.941	87297	87317	87337	87357	87378	87398	87418	87438	87458	87478	1	2
.942	87498	87519	87539	87559	87579	87599	87619	87640	87660	87680	2	4
.943	87700	87720	87740	87761	87781	87801	87821	87842	87862	87882	3	6
.944	87902	87922	87943	87963	87983	88004	88024	88044	88064	88085	4	8
.945	88105	88125	88145	88166	88186	88206	88227	88247	88267	88288	5	10
.946	88308	88328	88349	88369	88389	88410	88430	88450	88471	88491	6	12
.947	88512	88532	88552	88573	88593	88614	88634	88654	88675	88695	7	14
.948	88716	88736	88756	88777	88797	88818	88838	88859	88879	88900	8	16
.949	88920	88941	88961	88982	89002	89023	89043	89064	89084	89105	9	18
Log.	0	1	2	3	4	5	6	7	8	9		

TABLE LXXXII. *253

ANTI-LOGARITHMS, OR NUMBERS TO LOGARITHMS.

Log.	0	1	2	3	4	5	6	7	8	9
.950	89125	89146	89166	89187	89207	89228	89248	89269	89289	89310
.951	89331	89351	89372	89392	89413	89433	89454	89475	89495	89516
.952	89536	89557	89578	89598	89619	89640	89660	89681	89702	89722
.953	89743	89764	89784	89805	89826	89846	89867	89888	89908	89929
.954	89950	89970	89991	90012	90033	90053	90074	90095	90116	90136
.955	90157	90178	90199	90219	90240	90261	90282	90303	90323	90344
.956	90365	90386	90407	90427	90448	90469	90490	90511	90532	90552
.957	90573	90594	90615	90636	90657	90678	90698	90719	90740	90761
.958	90782	90803	90824	90845	90866	90887	90908	90928	90949	90970
.959	90991	91012	91033	91054	91075	91096	91117	91138	91159	91180
.960	91201	91222	91243	91264	91285	91306	91327	91348	91369	91390
.961	91411	91432	91453	91474	91496	91517	91538	91559	91580	91601
.962	91622	91643	91664	91685	91706	91728	91749	91770	91791	91812
.963	91833	91854	91876	91897	91918	91939	91960	91981	92003	92024
.964	92045	92066	92087	92109	92130	92151	92172	92193	92215	92236
.965	92257	92278	92300	92321	92342	92363	92385	92406	92427	92449
.966	92470	92491	92512	92534	92555	92576	92598	92619	92640	92662
.967	92683	92704	92726	92747	92768	92790	92811	92832	92854	92875
.968	92897	92918	92939	92961	92982	93004	93025	93046	93068	93089
.969	93111	93132	93154	93175	93197	93218	93240	93261	93282	93304
.970	93325	93347	93368	93390	93411	93433	93454	93476	93498	93519
.971	93541	93562	93584	93605	93627	93648	93670	93691	93713	93735
.972	93756	93778	93799	93821	93843	93864	93886	93907	93929	93951
.973	93972	93994	94016	94037	94059	94081	94102	94124	94146	94167
.974	94189	94211	94232	94254	94276	94297	94319	94341	94363	94384
.975	94406	94428	94450	94471	94493	94515	94537	94558	94580	94602
.976	94624	94646	94667	94689	94711	94733	94755	94776	94798	94820
.977	94842	94864	94886	94907	94929	94951	94973	94995	95017	95039
.978	95060	95082	95104	95126	95148	95170	95192	95214	95236	95258
.979	95280	95302	95324	95345	95367	95389	95411	95433	95455	95477
.980	95499	95521	95543	95565	95587	95609	95631	95653	95675	95697
.981	95719	95741	95763	95786	95808	95830	95852	95874	95896	95918
.982	95940	95962	95984	96006	96028	96051	96073	96095	96117	96139
.983	96161	96183	96206	96228	96250	96272	96294	96316	96339	96361
.984	96383	96405	96427	96450	96472	96494	96516	96538	96561	96583
.985	96605	96627	96650	96672	96694	96716	96739	96761	96783	96805
.986	96828	96850	96872	96895	96917	96939	96962	96984	97006	97029
.987	97051	97073	97096	97118	97140	97163	97185	97208	97230	97252
.988	97275	97297	97320	97342	97364	97387	97409	97432	97454	97477
.989	97499	97521	97544	97566	97589	97611	97634	97656	97679	97701
.990	97724	97746	97769	97791	97814	97836	97859	97881	97904	97926
.991	97949	97972	97994	98017	98039	98062	98084	98107	98130	98152
.992	98175	98197	98220	98243	98265	98288	98311	98333	98356	98378
.993	98401	98424	98446	98469	98492	98514	98537	98560	98583	98605
.994	98628	98651	98673	98696	98719	98742	98764	98787	98810	98833
.995	98855	98878	98901	98924	98946	98969	98992	99015	99038	99060
.996	99083	99106	99129	99152	99174	99197	99220	99243	99266	99289
.997	99312	99334	99357	99380	99403	99426	99449	99472	99495	99518
.998	99541	99563	99586	99609	99632	99655	99678	99701	99724	99747
.999	99770	99793	99816	99839	99862	99885	99908	99931	99954	99977
Log.	0	1	2	3	4	5	6	7	8	9

P. P.

For rows .951–.959	For rows .960–.969	For rows .970–.979	For rows .980–.989	For rows .990–.999
1 2	1 2	1 2	1 2	1 2
2 4	2 4	2 4	2 4	2 5
3 6	3 6	3 7	3 7	3 7
4 8	4 8	4 9	4 9	4 9
5 10	5 11	5 11	5 11	5 11
6 12	6 13	6 13	6 13	6 14
7 15	7 15	7 15	7 16	7 16
8 17	8 17	8 17	8 18	8 18
9 19	9 19	9 20	9 20	9 20